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TRANSACTIONS  
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NEW YORK STATE MEDICAL ASSOCIATION.

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TRANSACTIONS  
OF  
THE NEW YORK STATE  
MEDICAL ASSOCIATION,

FOR THE YEAR 1896,

*VOLUME XIII.*

EDITED FOR THE ASSOCIATION

BY E. D. FERGUSON, M. D.,

OF RENSSELAER COUNTY.



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## OFFICERS AND COUNCIL FOR 1895-'96.

---

### PRESIDENT.

DARWIN COLVIN, M. D., Fourth District, Wayne County.

### VICE-PRESIDENTS.

FIRST DISTRICT, C. H. GLIDDEN, M. D., Herkimer County.

SECOND DISTRICT, THOMAS WILSON, M. D., Columbia County.

THIRD DISTRICT, F. G. SEAMAN, M. D., Seneca County.

FIFTH DISTRICT, J. R. VANDERVEER, M. D., Orange County.

### SECRETARY AND TREASURER.

E. D. FERGUSON, M. D., Rensselaer County.

### CHAIRMAN OF THE LIBRARY COMMITTEE.

J. W. S. GOULEY, M. D., New York County.

### MEMBER OF THE COUNCIL AT LARGE.

AUSTIN FLINT, M. D., New York County.

### ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, A. P. DODGE, M. D., Oneida County.

“ “ W. H. ROBB, M. D., Montgomery County.

SECOND DISTRICT, A. T. VAN VRANKEN, M. D., Albany County.

“ “ G. E. McDONALD, M. D., Schenectady County.

THIRD DISTRICT, L. J. BROOKS, M. D., Chenango County.

“ “ W. L. AYER, M. D., Tioga County.

FOURTH DISTRICT, C. G. STOCKTON, M. D., Erie County.

“ “ E. M. MOORE, JR., M. D., Monroe County.

FIFTH DISTRICT, JOSEPH D. BRYANT, M. D., New York County.

“ “ JOHN D. TRUAX, M. D., New York County.

## COMMITTEE OF ARRANGEMENTS FOR 1895-'96.

---

DARWIN COLVIN, PRESIDENT.

E. D. FERGUSON, SECRETARY.

*Ex-Officio Members of the Committee.*

---

JOHN G. TRUAX, *Chairman.*

CHARLES E. DENISON, *Secretary.*

JAMES C. MACKENZIE,

JOHN W. S. GOULEY,

F. A. BALDWIN,

JOHN SHRADY,

JOSEPH D. BRYANT,

E. H. SQUIBB,

AUSTIN FLINT,

J. R. VANDERVEER,

F. H. WIGGIN.



## OFFICERS AND COUNCIL FOR 1896-'97.

*The Thirteenth Annual Meeting will be held at the Mott Memorial Library, in New York City, on October 12, 13, and 14, 1897.*

---

### PRESIDENT.

CHARLES PHELPS, M. D., New York, New York County.

### VICE-PRESIDENTS.

FIRST DISTRICT, R. N. COOLEY, M. D.,  
Hannibal Centre, Oswego County.

SECOND DISTRICT, E. M. LYON, M. D.,  
Plattsburgh, Clinton County.

THIRD DISTRICT, ROBERT ABERDEIN, M. D.,  
Syracuse, Onondaga County.

FOURTH DISTRICT, ALVIN A. HUBBELL, M. D.,  
Buffalo, Erie County.

### SECRETARY AND TREASURER.

E. D. FERGUSON, M. D., Troy, Rensselaer County.

### CHAIRMAN OF THE LIBRARY COMMITTEE.

J. W. S. GOULEY, M. D., 324 Madison Ave.,  
New York, New York County.

### MEMBER OF THE COUNCIL AT LARGE.

F. H. WIGGIN, M. D., 55 W. 36th St.,  
New York, New York County.

### ELECTED MEMBERS OF THE COUNCIL.

FIRST DISTRICT, W. H. ROBB, M. D.,  
Amsterdam, Montgomery County ; term expires 1897.

“ DISTRICT, JOHN P. SHARER, M. D.,  
Little Falls, Herkimer County ; term expires 1898.

- SECOND DISTRICT, GEORGE E. McDONALD, M. D.,  
Schenectady, Schenectady County ; term expires 1897.
- “ DISTRICT, THOMAS H. HANNAN, M. D.,  
Hoosick Falls, Rensselaer County ; term expires 1898.
- THIRD DISTRICT, W. L. AYER, M. D.,  
Owego, Tioga County ; term expires 1897.
- “ “ LEROY J. BROOKS, M. D.,  
Norwich, Chenango County ; term expires 1898.
- FOURTH DISTRICT, E. M. MOORE, JR., M. D.,  
Rochester, Monroe County ; term expires 1897.
- “ “ WILLIAM M. BEMUS, M. D.,  
Jamestown, Chautauqua County ; term expires 1898.
- FIFTH DISTRICT, JOHN D. TRUAX, M. D.,  
17 E. 127th St., New York, New York County ; term expires 1897.
- FIFTH DISTRICT, C. E. DENISON, M. D.,  
113 W. 12th St., New York, New York County ; term expires 1898.

## OFFICERS OF THE BRANCH ASSOCIATIONS FOR 1897.

---

### FIRST OR NORTHERN BRANCH.

*The Thirteenth Annual Meeting will be held as appointed by  
the President.*

#### OFFICERS.

PRESIDENT, R. N. COOLEY, M. D.,  
Hannibal Centre, Oswego County.  
SECRETARY, E. H. DOUGLAS, M. D.,  
Little Falls, Herkimer County.

#### EXECUTIVE COMMITTEE.

ISAAC DE ZOUCHE, M. D., Gloversville, Fulton County.  
THOMAS MCGANN, M. D., Wells, Hamilton County.  
W. D. GARLOCK, M. D., Little Falls, Herkimer County.  
J. MORTIMER CRAWF, M. D., Watertown, Jefferson County.  
ALBERT A. JOSLIN, M. D., Martinsburg, Lewis County.  
N. A. CALDWELL, M. D., Hageman's Mills, Montgomery County.  
G. ALDER BLUMER, M. D., Utica, Oneida County.  
E. F. MARSH, M. D., Fulton, Oswego County.  
GUY REUBEN COOK, M. D., Louisville, St. Lawrence County.

---

### SECOND OR EASTERN BRANCH.

*The Thirteenth Annual Meeting will be held at Saratoga, Sara-  
toga County, on the last Thursday in June, 1897.*

#### OFFICERS.

PRESIDENT, E. M. LYON, M. D., Plattsburgh, Clinton County.  
SECRETARY, JOSEPH E. BAYNES, M. D.,  
Troy, Rensselaer County.



## EXECUTIVE COMMITTEE.

W. B. SABIN, M. D., West Troy, Albany County.  
E. M. LYON, M. D., Plattsburgh, Clinton County.  
J. T. WHEELER, M. D., Chatham, Columbia County.  
C. A. CHURCH, M. D., Bloomingdale, Essex County.  
GEORGE CONKLING, M. D., Durham, Greene County.  
F. J. TOMPKINS, M. D., Lansingburgh, Rensselaer County.  
F. F. GOW, M. D., Schuylerville, Saratoga County.  
CHARLES HAMMER, M. D., Schenectady, Schenectady County.  
H. F. KINGSLEY, M. D., Schoharie, Schoharie County.  
D. J. FITZGERALD, M. D., Glens Falls, Warren County.  
JOHN LAMBERT, M. D., Salem, Washington County.

---

## THIRD OR CENTRAL BRANCH.

*The Thirteenth Annual Meeting will be held at Norwich, Chenango County, on the first Thursday in June, 1897.*

## OFFICERS.

PRESIDENT, ROBERT ABERDEIN, M. D.,  
Syracuse, Onondaga County.  
SECRETARY, F. W. HIGGINS, M. D., Cortland, Cortland County.

## EXECUTIVE COMMITTEE.

J. G. ORTON, M. D., Binghamton, Broome County.  
W. R. LAIRD, M. D., Auburn, Cayuga County.  
F. W. ROSS, M. D., Elmira, Chemung County.  
L. J. BROOKS, M. D., Norwich, Chenango County.  
H. O. JEWETT, M. D., Cortland, Cortland County.  
W. B. MORROW, M. D., Walton, Delaware County.  
MARTIN CAVANA, M. D., Oneida, Madison County.  
ELY VAN DE WARKER, M. D., Syracuse, Onondaga County.  
J. J. SWEET, M. D., Unadilla, Otsego County.  
B. T. SMELZER, M. D., Havana, Schuyler County.  
F. G. SEAMAN, M. D., Seneca Falls, Seneca County.  
W. L. AYER, M. D., Owego, Tioga County.  
C. P. BIGGS, M. D., Ithaca, Tompkins County.

## FOURTH OR WESTERN BRANCH.

*The Thirteenth Annual Meeting will be held at Rochester, Monroe County, on the Second Tuesday in May, 1897.*

## OFFICERS.

PRESIDENT, ALVIN A. HUBBELL, M. D., Buffalo, Erie County.  
SECRETARY, WM. H. THORNTON, M. D.,  
570 Niagara St., Buffalo, Erie County.

## EXECUTIVE COMMITTEE.

B. C. WAKELY, M. D., Angelica, Alleghany County.  
S. J. MUDGE, M. D., Olean, Cattaraugus County.  
T. D. STRONG, M. D., Westfield, Chautauqua County.  
C. C. WYCKOFF, M. D., Buffalo, Erie County.  
M. W. TOWNSEND, M. D., Bergen, Genesee County.  
B. T. KNEELAND, M. D., Dalton, Livingston County.  
E. M. MOORE, JR., M. D., Rochester, Monroe County.  
G. P. EDDY, M. D., Lewiston, Niagara County.  
F. R. BENTLEY, M. D., Cheshire, Ontario County.  
H. C. TOMPKINS, M. D., Knowlesville, Orleans County.  
C. S. PARKHILL, M. D., Hornellsville, Steuben County.  
SAMUEL INGRAHAM, M. D., Palmyra, Wayne County.  
Z. J. LUSK, M. D., Warsaw, Wyoming County.  
WM. OLIVER, M. D., Penn Yan, Yates County.

---

## FIFTH OR SOUTHERN BRANCH.

*The Thirteenth Annual Meeting will be held at Brooklyn, Kings County, on the Fourth Tuesday in May, 1897.*

## OFFICERS.

PRESIDENT, CHARLES PHELPS, M. D.,  
34 W. 37th St., New York, New York County.  
SECRETARY, E. H. SQUIBB, M. D.,  
P. O. Box 760, Brooklyn, Kings County.

## EXECUTIVE COMMITTEE.

- WILLIAM CRAMER, M. D., Poughkeepsie, Dutchess County.  
J. C. BIERWIRTH, M. D., Brooklyn, Kings County.  
A. D. RUGGLES, M. D., New York, New York County.  
M. C. CONNER, M. D., Middletown, Orange County.  
G. W. MURDOCK, M. D., Cold Spring, Putnam County.  
E. G. RAVE, M. D., Hicksville, Queens County.  
W. C. WALSER, M. D., West New Brighton, Richmond County.  
W. A. HULSE, M. D., Bay Shore, Suffolk County.  
J. A. MUNSON, M. D., Woodbourne, Sullivan County.  
H. VAN HOEVENBERG, M. D., Kingston, Ulster County.  
E. F. BRUSH, M. D., Mount Vernon, Westchester County.



LIST OF PRESIDENTS AND VICE-PRESIDENTS  
FROM THE FOUNDING OF THE ASSOCIATION.

---

1884.

PRESIDENT.

HENRY D. DIDAMA, M. D., Onondaga County, Third District.

VICE-PRESIDENTS.

FIRST DISTRICT, J. MORTIMER CRAWE, M. D., Jefferson County.

SECOND DISTRICT, TABOR B. REYNOLDS, M. D., Saratoga County.

FOURTH DISTRICT, B. L. HOVEY, M. D., Monroe County.

FIFTH DISTRICT, \*N. C. HUSTED, M. D., Westchester County.

---

1885.

PRESIDENT.

\*JOHN P. GRAY, M. D., Oneida County, First District.

VICE-PRESIDENTS.

SECOND DISTRICT, W. H. ROBB, M. D., Montgomery County.

THIRD DISTRICT, JOHN G. ORTON, M. D., Broome County.

FOURTH DISTRICT, JOSEPH C. GREENE, M. D., Erie County.

FIFTH DISTRICT, \*J. C. HUTCHINSON, M. D., Kings County.

---

1886.

PRESIDENT.

E. M. MOORE, M. D., Monroe County, Fourth District.

\*Deceased.

## VICE-PRESIDENTS.

FIRST DISTRICT, \*WILLIAM GILLIS, M. D., Franklin County.  
SECOND DISTRICT, H. C. VAN ZANDT, M. D., Schenectady County.  
THIRD DISTRICT, \*FREDERICK HYDE, M. D., Cortland County.  
FIFTH DISTRICT, \*J. G. PORTEOUS, M. D., Dutchess County.

---

1887.

## PRESIDENT.

\*ISAAC E. TAYLOR, M. D., New York County, Fifth District.

## VICE-PRESIDENTS.

FIRST DISTRICT, JOHN P. SHARER, M. D., Herkimer County.  
SECOND DISTRICT, L. C. DODGE, M. D., Clinton County.  
THIRD DISTRICT, \*GEORGE W. AVERY, M. D., Chenango County.  
FOURTH DISTRICT, DARWIN COLVIN, M. D., Wayne County.

---

1888.

## PRESIDENT.

JOHN CRONYN, M. D., Erie County, Fourth District.

## VICE-PRESIDENTS.

FIRST DISTRICT, BYRON DE WITT, M. D., Oswego County.  
SECOND DISTRICT, ROBERT SELDEN, M. D., Greene County.  
THIRD DISTRICT, CHARLES W. BROWN, M. D., Chemung County.  
FIFTH DISTRICT, EDWIN BARNES, M. D., Dutchess County.

---

1889.

## PRESIDENT.

WILLIAM T. LUSK, M. D., New York County, Fifth District.

\*Deceased.

## VICE-PRESIDENTS.

FIRST DISTRICT, S. H. FRENCH, M. D., Montgomery County.

SECOND DISTRICT, \*R. C. McEWEN, M. D., Saratoga County.

THIRD DISTRICT, ELIAS LESTER, M. D., Seneca County.

FOURTH DISTRICT, T. D. STRONG, M. D., Chautauqua County.

---

1890.

## PRESIDENT.

JOHN G. ORTON, M. D., Broome County, Third District.

## VICE-PRESIDENTS.

FIRST DISTRICT, DOUGLAS AYRES, M. D., Montgomery County.

SECOND DISTRICT, \*M. H. BURTON, M. D., Rensselaer County.

FOURTH DISTRICT, E. M. MOORE, JR., M. D., Monroe County.

FIFTH DISTRICT, WILLIAM McCOLLOM, M. D. (vice WILLIAM  
B. EAGER, M. D., deceased), Kings County.

---

1891.

## PRESIDENT.

STEPHEN SMITH, M. D., New York County, Fifth District.

## VICE-PRESIDENTS.

FIRST DISTRICT, DOUGLAS AYRES, M. D., Montgomery County.

SECOND DISTRICT, A. T. VAN VRANKEN, M. D., Albany County.

THIRD DISTRICT, J. D. TRIPP, M. D., Cayuga County.

FOURTH DISTRICT, R. J. MENZIE, M. D., Livingston County.

---

1892.

## PRESIDENT.

JUDSON B. ANDREWS, M. D., Erie County, Fourth District.

\*Deceased.

## VICE-PRESIDENTS.

FIRST DISTRICT, W. D. GARLOCK, M. D., Herkimer County.  
SECOND DISTRICT, G. E. McDONALD, M. D., Schenectady County.  
THIRD DISTRICT, LEROY J. BROOKS, M. D., Chenango County.  
FIFTH DISTRICT, H. VAN HOEVENBERG, M. D., Ulster County.

---

1893.

## PRESIDENT.

S. B. W. McLEOD, M. D., New York County, Fifth District.

## VICE-PRESIDENTS.

FIRST DISTRICT, R. N. COOLEY, M. D., Oswego County.  
SECOND DISTRICT, J. C. HANNAN, M. D., Rensselaer County.  
THIRD DISTRICT, N. JACOBSON, M. D., Onondaga County.  
FOURTH DISTRICT, Z. J. LUSK, M. D., Wyoming County.

---

1894.

## PRESIDENT.

THOS. D. STRONG, M. D., Chautauqua County, Fourth District.

## VICE-PRESIDENTS.

FIRST DISTRICT, ISAAC DE ZOUCHE, M. D., Fulton County.  
SECOND DISTRICT, J. C. BENHAM, M. D., Columbia County.  
THIRD DISTRICT, HOMER O. JEWETT, M. D., Cortland County.  
FIFTH DISTRICT, J. D. RUSHMORE, M. D., Kings County.

---

1895.

## PRESIDENT.

AUSTIN FLINT, M. D., New York County, Fifth District.



VICE-PRESIDENTS.

FIRST DISTRICT, DANIEL KLOCK, M. D., Montgomery County.

SECOND DISTRICT, W. H. HODGMAN, M. D., Saratoga County.

THIRD DISTRICT, F. W. PUTNAM, M. D., Broome County.

FOURTH DISTRICT, M. W. TOWNSEND, M. D., Genesee County.

---

1896.

PRESIDENT.

DARWIN COLVIN, M. D., Wayne County, Fourth District.

VICE-PRESIDENTS.

FIRST DISTRICT, C. H. GLIDDEN, M. D., Herkimer County.

SECOND DISTRICT, THOMAS WILSON, M. D., Columbia County.

THIRD DISTRICT, F. G. SEAMAN, M. D., Seneca County.

FIFTH DISTRICT, J. R. VANDERVEER, M. D., Orange County.

# LIST OF FELLOWS REGISTERED AT THIRTEENTH ANNUAL MEETING IN NEW YORK CITY.

*Held October 13, 14, and 15, 1896.*

---

## FIRST DISTRICT.

### MONTGOMERY COUNTY.

Ayers, Douglas, Fort Plain.      Robb, William H., Amsterdam.  
French, S. H., Amsterdam.

### OSWEGO COUNTY.

De Witt, B., Oswego.

---

## SECOND DISTRICT.

### CLINTON COUNTY.

D'Avignon, F. J., Au Sable Forks.      E. M. Lyon, Plattsburgh.

### COLUMBIA COUNTY.

Fritts, C. E., Hudson.      Wilson, Thomas, Claverack.  
Lockwood, J. W., Philmont.

### GREENE COUNTY.

Selden, Robert, Catskill.

### RENSSELAER COUNTY.

Bontecon, R. B., Troy.      Gravatt, E. J., Troy.  
Cahill, J. T., Hoosick Falls.      Hannan, T. H., Hoosick Falls.  
Ferguson, E. D., Troy.

THIRD DISTRICT.

BROOME COUNTY.

Farrington, J. M., Binghamton. Putnam, F. W., Binghamton.  
Orton, J. G., Binghamton.

CORTLAND COUNTY.

Bradford, G. D., Homer. Jewett, H. O., Cortland.

ONONDAGA COUNTY.

Aberdein, Robert, Syracuse. Didama, H. D., Syracuse.

OTSEGO COUNTY.

Leaning, J. K., Cooperstown.

SENECA COUNTY.

Seaman, F. G., Seneca Falls.

---

FOURTH DISTRICT.

CHAUTAUQUA COUNTY.

Bemus, W. M., Jamestown. Strong, Thomas D., Westfield.  
Richmond, N. G., Fredonia.

ERIE COUNTY.

Bennett, A. G., Buffalo. Hubbell, A. A., Buffalo.  
Cronyn, John, Buffalo. Thornton, W. H., Buffalo.

GENESEE COUNTY.

Townsend, M. W., Bergen.

MONROE COUNTY.

Hovey, B. L., Rochester.

WAYNE COUNTY.

Atwood, J. W., Marion. Colvin, Darwin, Clyde

## WYOMING COUNTY.

Ellinwood, A. G., Attica.

Lusk, Z. J., Warsaw.

## FIFTH DISTRICT.

## DUTCHESS COUNTY.

Barnes, Edwin, Pleasant Plains. Le Roy, I. D., Pleasant Valley.

Julian, J. M., Pleasant Valley.

## KINGS COUNTY.

Bierwirth, J. C., Brooklyn.

Biggam, W. H., Brooklyn.

Coffin, Lawrence, Brooklyn.

Essig, George, Brooklyn.

Feeley, J. F., Brooklyn.

Hicks, E. E., Brooklyn.

Huestis, W. B., Brooklyn.

Leighton, N. W., Brooklyn.

Lloyd, T. M., Brooklyn.

Minard, E. J. C., Brooklyn.

North, N. L., Brooklyn.

Russell, W. G., Brooklyn.

Squibb, E. H., Brooklyn.

Squibb, E. R., Brooklyn.

Steinke, H. C. O., Brooklyn.

Sullivan, J. D., Brooklyn.

Wieber, Adolph, Brooklyn.

## NEW YORK COUNTY.

Alexander, Samuel, New York.

Arnold, G. C., New York.

Bozeman, N. G., New York.

Bryant, J. D., New York.

Bull, C. S., New York.

Chrystie, T. M. L., New York.

Davis, J. G., New York.

de Landeta, I. B., New York.

Delphey, E. V., New York.

Denison, C. E., New York.

Denison, Ellery, New York.

Dudley, A. P., New York.

Eliot, Ellsworth, New York.

Erdmann, J. F., New York.

Ferguson, Frank, New York.

Flint, Austin, New York.

Flint, Austin, Jr., New York.

Gouley, J. W. S., New York.

Harrison, G. T., New York.

Haubold, H. A., New York.

Hepburn, N. J., New York.

Hillis, T. J., New York.

Jackson, C. W., New York.

Janvrin, J. E., New York.

Judson, A. B., New York.

Kelly, Thomas, New York.

Leale, C. A., New York.

Ludlow, O. C., New York.

Lusk, W. T., New York.

Lynch, P. J., New York.

MacGregor, J. R., New York.

MacKenzie, J. C., New York.

Manley, T. H., New York.

McLeod, S. B. W., New York.

Milliken, S. E., New York.

Newman, Robert, New York.



O'Brien, M. C., New York.	Shrady, John, New York.
Phelps, Charles, New York.	Shrady, J. E., New York.
Pratt, Frank R., New York.	Silver, H. W., New York.
Purple, S. S., New York.	Smith, S. W., New York.
Ruggles, A. D., New York.	Stewart, G. D., New York.
Sayre, L. A., New York.	Truax, J. G., New York.
Sayre, R. H., New York.	Wiggin, F. H., New York.
Seaman, L. L., New York.	Yankauer, Sidney, New York.

ORANGE COUNTY.

Connor, M. C., Middletown.	Vanderveer, J. R., Monroe.
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SUFFOLK COUNTY.

Hamill, E. H., Newark, N. J.
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SULLIVAN COUNTY.

Stearns, B. W., Long Eddy.
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WESTCHESTER COUNTY.

Acker, T. J., Croton-on-Hudson.
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ULSTER COUNTY.

Van Hoevenberg, H., Kingston.
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CORRESPONDING FELLOW.

H. O. Marcy, M. D., Boston, Mass.
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SUMMARY BY DISTRICTS OF FELLOWS REGISTERED.

First District	4
Second District	11
Third District	9
Fourth District	13
Fifth District	78
Corresponding fellow	1

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# DELEGATES FROM OTHER MEDICAL ORGANISATIONS AND INVITED GUESTS IN ATTENDANCE.

## CONNECTICUT.

W. G. BRONSON, M. D., NOROTON HEIGHTS.	Invited Guest.
J. FRANCIS CALEF, M. D., MIDDLETOWN.	Delegate.
T. D. CROTHERS, M. D., HARTFORD.	Invited Guest.
CHARLES A. TUTTLE, M. D., NEW HAVEN.	Invited Guest.

## NEW JERSEY.

DANIEL A. CURRIE, M. D., ENGLEWOOD.	Delegate.
ISAAC N. QUIMBY, M. D., JERSEY CITY.	Invited Guest.

## KINGS COUNTY ASSOCIATION.

E. REYNOLDS, M. D., BROOKLYN.	Delegate.
J. O. POLAK, M. D., BROOKLYN.	Delegate.

## MAINE.

IRVING E. KIMBALL, M. D., PORTLAND.	Delegate.
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## OHIO.

J. P. WEST, M. D., BELLAIRE.	Invited Guest.
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## VERMONT.

O. C. BAKER, M. D., BRANDON.	Delegate.
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## ADDRESS OF WELCOME AND REPORT OF COMMITTEE OF ARRANGEMENTS.

By JOHN J. TRUAX, M. D., of New York County, Chairman of the Committee.

*October 13, 1896.*

GENTLEMEN: The Committee of Arrangements, and the Fellows of New York county, through me, bid you welcome to our city, and to this meeting.

It has been my duty to do it so many times, that it is growing to seem quite natural,—nevertheless, it affords me just as much pleasure to-day as it did the first time.

We can no longer consider ours a young society; we have made a record for hard and earnest work, as well as having established or preserved a principle. It may be said, even, that we have our traditions, the memory of which has given to the writer many hours of pleasant recollections. It would not be an unpleasant task, did time permit, to recall to your memory some of these traditions. At some future time, with your permission, it may be my fortune to do so.

I wish to call your attention to the improvement made in the rooms on the first floor. It will make for the Fellows as pleasant a lounging place, during the sessions of this meeting, as could be found in the city.

Your attention is also called to the programme, a careful perusal of which will enlighten you as to the work done by your Committee of Arrangements, and the subjects to be considered at this meeting.

For the complete success of the meeting, it is necessary that all papers be thoroughly discussed. We hope the Fellows have come prepared to do so. All are cordially invited to take part in the discussion of papers. Just a thought, or

a bit of experience, any facts known to the speaker, or a new idea, is the thing that makes a discussion valuable.

The programme contains an address on "Medical Expert Testimony," and one on "Surgery"; also a discussion on "Prostatic Enlargement," and many other papers.

The five districts of the state have contributed scientific papers in the following proportions:

First District	.	.	.	.	.	.	.	.	2
Second "	.	.	.	.	.	.	.	.	2
Third "	.	.	.	.	.	.	.	.	3
Fourth "	.	.	.	.	.	.	.	.	3
Fifth "	.	.	.	.	.	.	.	.	31
States other than New York	.	.	.	.	.	.	.	.	5

In the sixty counties of the state, Fellows of the Association from ten counties have contributed as follows:

First District, Montgomery County	.	.	.	.	.	.	.	2
Second " Rensselaer "	.	.	.	.	.	.	.	1
" " Schenectady "	.	.	.	.	.	.	.	1
Third " Onondaga "	.	.	.	.	.	.	.	3
Fourth " Wyoming "	.	.	.	.	.	.	.	1
" " Chautauqua "	.	.	.	.	.	.	.	1
" " Wayne "	.	.	.	.	.	.	.	1
Fifth " New York "	.	.	.	.	.	.	.	25
" " Kings "	.	.	.	.	.	.	.	3
" " Westchester "	.	.	.	.	.	.	.	3

In accordance with subject-matter, the papers are classified as follows:

General Medicine	.	.	.	.	.	.	.	17
" Surgery	.	.	.	.	.	.	.	19
Criminology	.	.	.	.	.	.	.	2
Gynaecology	.	.	.	.	.	.	.	6

The following changes and additions are to be made in the official programme:



H. O. Marcy, of Boston, Mass., will read a paper on the "Relief of Biliary Obstruction of the Common Duct, by Surgical Treatment."

Dr. Alvin A. Hubbell, of Buffalo, Erie county, will read a paper, title not given.

Dr. Percy Bryant, of Buffalo, Erie county, will read a paper on the "Therapeutics of Epilepsy."

Dr. George F. Cott, of Erie county, will read a paper on the "Ablation of Tonsil—Death."

Dr. J. Lewis Smith, of New York county, will read a paper on the "Hindrances to the Successful Treatment of the Diseases of Infancy and Childhood, and How to Examine a Sick Child."

A cordial invitation is extended to the Fellows of the Association, also to the visitors and delegates from sister Associations, to the collation served on Wednesday evening in the rooms on the floor below.

## THE PRESIDENT'S ANNUAL ADDRESS.—MEDICAL EXPERT TESTIMONY.

By DARWIN COLVIN, M. D., of Wayne County.

FELLOWS OF THE NEW YORK STATE MEDICAL ASSOCIATION: The by-laws of our Association require of its President an address at each annual meeting, and although there is nothing obligatory on the subject, yet very properly it is presumed that said address will be directly or indirectly on some subject pertaining to medicine. That which I have chosen for this occasion, if not directly connected with it, is upon the border-land, as intimately associated with it are members of the medical profession, to wit:—Medical expert testimony,—how obtained,—its unreliability,—the necessity for an entire change in the present manner of procuring the same, etc. For more than thirty years I have been much in the courts as a medical expert witness, and for some years past, and after much consideration, I have been strongly impressed with the inefficiency of such evidence, owing to the radically wrong manner in which it is obtained.

More or less of such evidence, as given upon a trial, cannot be of a dispassionate character, consequently, must be illy calculated to develop the truth in each case; for when a medical expert offers himself for hire, which he does after accepting the liberal fee which is usually given, he almost irresistibly enlists himself in the service of *the side*, shall I say, from which he accepts the fee. You observe that I reluctantly made use of the phrase “the side,” which is so common with experts and others, yet it should be avoided and abominated, as nothing is more disreputable than to hear a medical expert use the phrase, “our side,” when in conversation relative to the litigation in which he is a witness, or when he is giving testimony. To me, it not only smacks

strongly of the vocabulary of the base-ballist, but it goes farther :—

It indicates that the witness has stepped down from the lofty pedestal which he should occupy, and is willing to fraternise with whomever and whatever will tend to the success of those who, at first, sought only his professional opinion. The writer was deeply impressed with this fact while reading an account of a trial for murder in Baltimore, some years ago, where the opinions of medical experts were given. During the progress of the trial, and after one of these witnesses had, in his zeal, frequently used the phrase, "our side," when referring to the party in whose interest he was testifying, the presiding judge manifested so much irritability as to induce him to administer a scathing and, no doubt, well-merited rebuke to the gentleman occupying the witness chair.

Right here is where medicine suffers, for must it not when two experts testify in favour of opposing parties, and one asserts that a certain analysis indicates the existence of a certain poisonous agent, while the other flatly contradicts the statement: or where, as in a recent case under the writer's observation, an expert testified that a slight lateral curvature of the dorsal spine, of which the party was ignorant, and which had never been attended with the slightest constitutional symptom, was due to certain causes which were then being investigated, and another, equally as positive, swore that it was not?

Great diversity of opinion on the part of medical experts is frequently observed in the trials of suits for damages brought against railroad companies; in will contests where the mental capacity of the testator is in question; in trials of indictments for murder in which the plea of insanity is set up; and in suits for malpractice, although actions of the latter character are far less frequent than formerly, owing to greater liberality on the part of the courts, and a higher tone of fraternal feeling which seems to exist in the medical profession than in earlier days.

While my life may not be sufficiently prolonged that I

may see any decisive legislative action on this subject, owing, partially, to the vehement opposition, for obvious reasons, with which such efforts would be met; yet I am sufficiently optimistic to believe that ere long it will enlist the attention of the courts, the profession, and the legislative branches of the state, and that there are those present who will become interested, and who will valiantly, at the proper time, aid in breaking down the barriers which may be raised to discourage the passage of just laws on the subject; for until that time, medical expert testimony, instead of occupying that high and enviable position to which it is entitled, will continue to remain with the loathsome folds of undue influence and sordid avarice tightly coiled around it.

From what I may say, I wish to disclaim any intention of arraigning the medical expert for the course which he has, almost from necessity, to pursue, as no one, better than the writer, knows the environments by which he is irresistibly surrounded, but I do arraign the present humiliating, unjust, and unwise custom of procuring his services, and which has so long been permitted to exist. Let me, for a moment, consider how the services of the medical expert are procured. As the trial of the action, be its nature what it may, approaches, the attorney, either in a personal interview or by correspondence (generally the former), makes a statement of his case, and if the conference is satisfactory, an agreement as to the compensation is made, as no one other than the lawyer thinks better of the sentiment in *Hudibras*:—

“ Is not the winding up witnesses,  
And nicking, more than half the bus’ness?  
For witnesses, like watches, go  
Just as they ’re set, too fast, or slow.  
And when in conscience they ’re straight-laced,  
’Tis ten to one that side is cast.”

Under this condition of things the expert cannot engage in an investigation of the case uninfluenced and untrammelled. With the facts connected with the case he has noth-



ing to do, as he is engaged only in a professional capacity. So clearly is this now understood that most of the courts have decided that when by chance he may be cognisant of facts connected with the case, to those facts, if properly subpoenaed and the fee paid, he is obliged to testify. But when his professional knowledge as an expert in the same case is sought, and he has not been properly remunerated, he can draw the line and refuse to testify, on the ground that his professional knowledge is his property and that the simple fee attending the subpoena is wholly inadequate. If, upon his refusal to testify, the presiding judge should be so illiberal and narrow-minded as to place him in contempt and send him to jail, a writ of habeas corpus will generally restore him to liberty. Such an extreme, however, seldom occurs, as a party to a suit would not relish testimony given under a protest, and quite likely it would only be where the opinion of the attending physician, as testifying to facts, was sought as an expert. To show the utter unreliability of medical expert testimony at the present time, permit me to select and epitomise a few cases, among many others of a kindred nature, taken from my "common-place book," omitting names and dates.

CASE I.—A young man became so desperate while nursing a jealous hatred toward another, that he took his gun and secreted himself by the roadside in a piece of woods through which the highway ran, and along which he knew his intended victim would pass at a certain time on this eventful morning. It was not long before the murderer's opportunity presented itself, and he fired the fatal shot. Immediately thereafter the assassin voluntarily placed himself in the custody of the sheriff, saying, "I have killed a man, and *I am crazy*." In due time the criminal was indicted, and not long after the expected trial approached.

About this time I was asked by the district attorney to visit the prisoner for the purpose of examining his mental condition. After two visits I became convinced that he was malingering, and I so informed the people's officer. There was nothing otherwise to be learned that tended to disprove the conclusion at which I had arrived; on the contrary, there was much to corroborate. On the

afternoon preceding the day of trial, a distinguished alienist of this state came into the town and was quietly conveyed to the jail for the purpose of having an interview with the prisoner. Notwithstanding the writer's opinion was known, yet, for some unaccountable reason, he was not invited to be present. During the following evening I learned that there was a conference (ostensibly a card-party) in the alienist's room, composed of himself, the district attorney, attorney-general of the state, prisoner's counsel, and, although some years have since elapsed, I think the judge who was to preside at the trial.

The following morning the clouds of guilt which had been hovering over the prisoner had cleared away, and I was met by the district attorney and attorney-general with the astounding intelligence that the prisoner was insane, and that they had concluded to go through with an informal trial, *the alienist, only, to be sworn*, and send the prisoner to an asylum; and, furthermore, that my services would not be needed. I not only expressed my astonishment, but my condemnation, in language not to be misunderstood, at this execrable travesty of justice. A superficial trial, occupying but a short time, was had, and the prisoner was conveyed to an asylum. I learned that after a few days he was given the freedom of the grounds for a short time, when he ran away, and no effort was made to capture him. For some years thereafter I occasionally heard of him, *not* as a lunatic, but as a sane man.

CASE II.—Two gentlemen, friends, entered a street car in a neighbouring city and took seats. Immediately thereafter, a woman also entered and discharged the contents of a pistol in the face of her intended victim. The ball traveled through the cheek of him whom she sought to destroy, and passed on into the body of the innocent man, killing him at once. She was arrested, indicted, and tried for murder. The plea was transitory mania. All circumstances connected with the crime indicated premeditated murder. Among them was the fact that the prisoner, a non-resident, had occupied apartments opposite the residence of the person whom she intended to slay for a few days previously, and as she saw him and his friend enter the car, she immediately followed, and, as before stated, fired the fatal shot. The trial was one of the most celebrated forensic efforts which has occurred in this state, as it was conducted by an array of legal talent seldom seen engaged in one case, the hypothetical question propounded

by the defense requiring one hour to properly present it to the defendant's experts. Five experts (three of distinction) were sworn. As is usual, those for the people swore most emphatically that the prisoner was not only sane at the time the act was committed, but was so at the present time; while three others were equally positive that she was insane. She was acquitted.

CASE III.—The health of a wealthy and childless medical gentleman residing in the eastern part of this state began to decline, and its progress was such that he thought best to express his wishes relative to the distribution of his property after death, and while there could be no question relative to his mental capacity, by will. I must avoid giving the reasons why a certain party subsequently, by strategy, and after the testator's mind had become seriously impaired, induced him to make a second will entirely at variance with the first. Not long after, the testator died, and soon an attempt was made to establish the validity of the second will. Four of the ablest lawyers in that part of the state were engaged in the case; also four medical experts, two of whom had reputations extending throughout the state.

The contest was fiercely fought, as the estate was large. After two weeks of unabated mental strife it came to an end. It was proven that on or about the day of making the second will, the testator was so oblivious to his surroundings that he addressed his attending physician thus: "Doctor, did you come in a cutter, or how?" although it was an intensely hot morning about the last of July or the first of August. Also, "Why, Doctor, I was out last night up at ——" (mentioning some place out of the city), whereas he had not been out of his room, and was much of the time in bed, for a long time previously. Also, that an autopsy was made which revealed serious lesions of the brain, and connected with which was found "an abscess at the base about the size of a hen's egg." Notwithstanding this and much more that I am not at liberty to state (as it is only with the medical part which my object has in view), two distinguished experts, corroborated by one or more lesser lights, unhesitatingly, persistently, and unblushingly swore that the testator was of sound mind at the time of making the second will; while two others of less renown testified that he was not of sound mind at the time, consequently was incompetent. It seems scarcely necessary to say that, notwithstanding this abominable testimony, the party failed to sustain the second will, and the widow was given that which the testator designed she should have.

CASE IV.—For reasons unnecessary to detail, some of the children of a well-preserved and wealthy old gentleman—one who was shrewdly and judiciously managing his estate, sought to have a commission appointed, ostensibly for the purpose of deciding as to his competency for caring for his interests, but in reality hoping to have him declared mentally incompetent. A short time before the day appointed for taking testimony, I was asked to see him, and yet in a manner to entirely disarm him, for a time, of any suspicion of my personality. From my observations during this and a subsequent interview, I discovered nothing to contra-indicate a normal mental condition—not even anything to indicate the approach of senility. The lay testimony (his neighbours and those with whom he transacted business) completely failed to show any mental incompetency, and yet two medical experts of that county, one of whom sustained much more than a local reputation, and the other had the confidence of the community in which he resided, swore, unqualifiedly, that this man, who was shrewd enough to accumulate a great deal of property, and who was still daily adding to it, was incompetent to safely manage his estate. The legal talent engaged was of a high order, and the jury decided that the old gentleman was competent, as his subsequent history fully proved.

“Yet doth he live: exclaims the impatient heir,  
And sighs for sables which he must not wear.”

A few days after the verdict was rendered, the old gentleman was heard to say, in a facetious manner: “Now as my neighbours have said that I am competent to care for my property, I will make my will to-day.” He did so, and lived four years thereafter: and after his death no contest was made when the will was offered for probate.

CASE V.—Some years ago, on one of the northern railroads of this state, a portion of a train left the track and went down an embankment, injuring many of the passengers. Among the injured was a lady whose home was in a city quite remote from the place where the accident occurred, and being too seriously injured to be conveyed thither, she was taken to a city near by, where she was obliged to remain quite a long time. Failing to effect a satisfactory settlement with the company, an action for damages was brought and tried, the jury awarding a large verdict for the plaintiff. From this verdict the company appealed, and a new



trial was ordered. Nearly two years after, and a week before the second trial was to take place, the writer was asked to visit the plaintiff, at her home in a neighbouring city, she still being an invalid and unable to be present at the trial.

At this visit the distinguished alienist referred to in previous cases was also present. After a very thorough investigation of the case, followed by a consultation, during which the attending physician was present, we returned to our homes.

The interests of both plaintiff and defendant were entrusted to two of the most eminent members of the bar in central New York, assisted by others: also there were six medical experts—three of well-known reputation throughout the state (one of them the gentleman who met me at the bedside of the plaintiff, and the one who has been conspicuous in some of the cases heretofore reported).

During the trial three of the experts swore positively that the plaintiff's injuries "were not serious," that her condition was "simply a manifestation of hysteria," a traumatic neurosis, and that she would fully recover; while the remaining three testified that her symptoms did "not indicate a functional fault, but an organic lesion," and that "they were grave in character, and that although she might live for a time, the case would terminate fatally, as a result of the accident." The jury rendered a verdict much in excess over that which was awarded on the former trial.

As it is not within the scope or intent of this paper to give an opinion relative to the merits of this or any other case reported, it being only the antagonistic character of the medical testimony which concerns me, I refrain from doing so.

The subsequent history of this plaintiff was different from that which usually follows the final ending of a verdict for the plaintiff in railroad injuries, rapid recovery, as, although I never saw her after my visit at her home, I learned that she lived about three years after the trial, remaining a confirmed invalid up to her death.

Permit me to relate an incident which occurred at the close of the trial and while returning to my home. Accidentally, I occupied a seat by the side of one of the leading counsel for the defense, in fact the chief, and one who occupied the topmost bough of the legal tree. When our conversation seemed to drift towards the salient points in the recent trial, I said to him: "Why is Dr. ——— so often in the courts, antagonising the profession, regardless of the question at issue? He is not in practice and I



don't know that he has ever been; moreover, I understand that it is only mental diseases in which he claims to be an expert, and yet the profession find him arrayed against them very frequently in the courts." His reply was very significant: "Why, Doctor, don't you know? I will tell you. It is only the prestige of his position and name that we care anything about, but I don't think I have made much by that in this case." There we have it; professional ability to properly and honestly investigate the merits of a case made secondary to position—a play upon the minds of a non-professional jury. What must honourable members of the medical profession think of expert testimony obtained on such a basis? Is it possible that any medical man who makes pretensions of possessing an unsullied reputation in his profession would sacrifice it at the shrine of gold, where grave questions were at issue? I will not insult this intelligent audience by putting such an interrogatory.

With the report of two more cases, which are so nearly parallel that I will endeavour to include them in one, I will extend them no farther, although I could cite more, as well as several suits for malpractice, in which the same discrepancy of opinion was manifest, but not, in all the cases, for the same reason.

CASES VI AND VII.—These accidents occurred some months from each other,—one in winter, the other in summer.

The victims were school-girls about the same age and living fifty miles apart. They were approaching a railroad crossing—one was in a sleigh riding with a neighbour, and the other was in a wagon riding with her parents.

An engine struck the sleigh containing the driver and girl, killing the driver and for the time severely, though temporarily, injuring the girl. As the wagon containing the other girl and her parents came upon the crossing, it was struck by a rapidly-moving engine, killing the man and his wife, and not seriously injuring the girl. In due time both girls returned to their schools and continued their studies uninterruptedly up to the time the writer saw them—about two years after, and just before actions for damages were to be tried. On the trial of each case, notwithstanding that the general condition of the girls was carefully and thoroughly investigated in the presence of the medical experts for both parties, and without a criticism of the conclusions which seemed to have been mutually arrived at, yet there were three experts in the interest of each plaintiff who unhesitatingly swore that they were permanently injured, notwithstanding their record

in school and admitted normal condition at the time of examination, and would never again be in good health. In fact, one of the gentlemen went so far in his zeal as to swear that one of the girls was "now afflicted with a low form of brain disease."

The testimony of the experts for the defense was, that they "find the girls in good health, and with no indication whatever of any ill effects from the injuries now remaining." The writer saw one of the girls two years after, and found that she had continued in school, and was in good health. Notwithstanding all this, both plaintiffs were given verdicts—one a large one, and the other much less.

To especially brand the present custom of obtaining medical expert testimony as infamous, allow me to say, that on the day following the testimony as given by one of the experts for one of the plaintiffs, I was called upon by the gentleman (after having done what mischief he could), who expressed some regret for having given such testimony as he did the previous day, and so far humiliated himself as to say, "I regret having testified as I did yesterday, in some respects," and actually asked me to so state to the counsel for the defense. He even went farther, and proposed that if the counsel for the defense so desired, he would go upon the stand and materially modify his testimony of the previous day. His proposition was indignantly spurned by the counsel. Expert testimony indeed!

"O shame, where is thy blush?"

Allow me to quote from an article in the leading medical journal of America, it being part of the report of a famous trial for murder, during the past year, in one of the southwestern cities. "After listening to testimony for three weeks, the jury brought in a verdict of murder in the first degree. The defense was insanity, and the only chance for justice lay in the weight given to expert testimony. As is usual in cases of this kind, experts appeared for each side, with the result that the case was decided with but slight reference to the facts brought out by the medical testimony, and that medical expert testimony was again covered with popular discredit. With division of opinion among men of such repute, it is no wonder that a jury of farmers should take the view that the prisoner's crime was an act of

drunkenness, as the simplest solution of the case, especially in view of the prejudice against the plea of insanity as an excuse for crime, and the particular prejudice in this case, arising from the fact that the culprit's wealth has been regarded as a means that would be used to obtain an acquittal."

"The woods are full" of prejudice at the present time, against medical expert testimony, owing solely to the present manner of procuring it. Just let the medical expert enter the witness-box without the fear or favour of either of the parties in the suit, and all this condemnation would cease, his testimony, as well as he himself, would be respected, and he would occupy a position second only to his honour on the bench.

Relative to a recent trial for murder in this state, where the plea of insanity was made and where a number of experts were arrayed for each party, I observe the following criticism:

"Before the close of the trial, the prisoner, who was said to be insane, offered to plead guilty of murder in the second degree." While the court and district attorney were hesitating whether to accept it or not, the following appeared in one of the city papers:—"If there be another trial, we shall again have the clashing testimony of medical experts."

In recent years medical expert testimony is largely on the market. The judges of our courts have come to regard expert testimony with little favour, unless they know the competence and integrity of the witnesses, and their disinterestedness in the case in which they testify.

These experts testified that ——— was accountable for his acts; that he was not accountable for his acts; that he was sane, insane, and half sane,—their opinion depending apparently upon the source of their retaining fee. Indeed, wherever a plea of insanity is entered in a criminal case, the same farce is re-enacted—experts of all shades of expertness swearing themselves black and blue in the face by all the ghosts of alienists dead and buried, in direct contradiction of each other.

So far as this testimony has any effect in inducing a just, sober, and merciful verdict, it is as hollow as the tipstaff's cry on opening the court.

Two perfectly impartial men may differ over a case, but an honest difference of opinion is another thing from the quarreling of rival hosts of paid experts, contending as fiercely for their clients as if they were lawyers rather than witnesses. Quite a severe arraignment, yet who can deny, in a measure, its truth? This discrepancy of opinion is not governed by one grade of talent, as it will be heard from those who are eminent in the profession, as well as from those whose reputation does not extend beyond the border of their daily work. In all cases where medical expert testimony is found in the interest of both parties, one portion is always right while the other is always wrong, owing to its diametrically opposite character. Together with this fact, it must be asserted that the medical antagonists are equally extravagant in their efforts to convince the jury of the correctness of their conclusions. Now, this tremendous wrong of which I complain will exist so long as the present manner of obtaining medical expert testimony is allowed to continue.

In view of the *invariably* antagonistic character of the testimony under consideration, is it not full time that some initial step should be taken whereby it can be lifted out of that immeasurable abyss of humiliation in which it has so long been floundering, and a radical change be brought about, to the end that the expert shall no longer be considered as occupying no higher position in the court room than a street sweeper or the motor man of a street-car, who can only testify to simple facts which happen to occur under his observation; or, by listlessness, will the profession continue to allow the shadows to deepen, and be the victims of worse than philippics, rather than of panegyrics?

I used the word "*invariably*" a moment since, when speaking of the varying character of expert testimony, as I have known but one case where the experts of both parties seemed to fully agree; and yet, that unusual harmony was not



dreamed of until four days had been consumed in the trial of the case, and when near the termination of one of the most diabolical murders of which I have been cognisant. The plea, as is usual in such flagrant cases, and where there is no paucity of gold, was insanity. "If money go before, all ways do lie open."

Notwithstanding I peremptorily refused to be connected with the case, for obvious reasons, yet I was made quite familiar with its progress by one immediately engaged in it, and am not betraying confidence when I say that all that was hoped for, and all that was expected, from the subterfuge of such a plea, was an escape from electrocution. From subsequent information given me, it was quite evident that some of the medical experts connected with the case gave little heed to Pope's beautiful couplet:

"Honour and shame from no condition rise;  
Act well your part, there all the honour lies."

And now, Fellows, it might very properly be said of one who has given much thought to any subject which, in his opinion, requires that radical changes should be wrought, that he should be able to specify what those changes should be and how best they can be attained. However, to apply this reasoning to the writer's thoughts or conclusions upon the subject under consideration, I frankly confess, that with the exception of how or in what manner the medical expert should be permitted to become connected with any suit at law where such services may be required, I have no well-defined views to express at this time, for until the entrance of the expert into the court room shall cease to depend upon the agency of either party to the issue, I have but little to offer. However, when that can be consummated, all else will easily follow. To effect the primary necessity, the position of the expert *must be by appointment* from a source higher than any which can by any possibility have an interest in the litigation, and from a source entirely remote from criticism. Also, I would have one of the requirements of one occupying that position, that he should, after examining a



case and before being sworn, as well as during the progress of the trial, occupy the independent position of a juror so far as approaching or allowing himself to be approached by either of the parties or their agents is concerned, and for a violation of said requirement I would make it a misdemeanour punishable by fine, or fine, imprisonment, and removal from office, depending upon the flagrancy of the offense. As to the remuneration of the expert, the position should not be a salaried one, but the services should be provided for by a liberal per diem allowance—one amply sufficient to remunerate the best talent in the profession, said allowance to include all the time spent in the examination of a case in or out of court, as well as while in attendance upon the trial, and until his services are no longer required. As to the number, how and by whom appointed, I will make no suggestions, as such details would be the legitimate work of a legislative committee, should this subject ever attract sufficient attention from the medical profession.

The subject is already attracting the attention of the profession in some portions of Europe, more especially in Germany, where the establishment of certain schools for the purpose of didactic instruction on all subjects with which the medical expert is required to be familiar, is contemplated.

Finally, believing that “equal justice to both plaintiff and defendant will not obtain until such time as the so-called expert is placed, by statute, beyond the influence of monetary considerations;” and that the radical change, heretofore suggested, is the only one which will make the position of the medical expert not only enviable, but honourable, I shall content myself with the thought that possibly what I have said on this occasion may be the means of arousing the attention of some who have had no special reasons for investigating this most important subject—one which so imperatively demands the attention of all honourable members of our noble profession.

NOTE. Not until after this paper was written, was the writer aware that this subject, in the form of a bill, had been presented to the legislature of this state.

D. C.

## ADDRESS: THE MEDICAL PROFESSION AT THE CLOSE OF THE NINETEENTH CENTURY.

By CHARLES PHELPS, M. D., of New York County.

October 14, 1896.

It has come to be the custom in the medical profession on formal occasion to rehearse its later triumphs, to glorify its present as an Augustan age, and to foresee its future in brilliant lights, through which are cast no shadows of distrust. It is a custom rightly honoured in the observance. The science and art of medicine hold a position of honour and consideration, dependent upon extraordinary advances on both medical and surgical lines, which is unparalleled in their history. We may well felicitate ourselves that as a profession we have not lagged behind in the revival of intellectual activity which distinguishes the present era in science. It is proper that we should celebrate with pomp of words the splendid achievements of our immediate predecessors and of our contemporaries; it is pardonable if our exultation has been sometimes voiced in too magniloquent and resounding phrases, and not always tempered by a generous remembrance of the struggles and successes of a remoter time.

Reflection naturally succeeds to exultation. After a decade of mutual congratulations, the time is fitting for a consideration of the forces, both extraneous and inherent, which have conspired to enhance the usefulness and renown of the medical calling, and for an estimation of the several and diverse tendencies toward good and evil which dominate it now, and which, unchecked, are destined to shape its future.

The present supposed *renaissance* of medical art is but a somewhat sudden increase in the energy of an irregular but

ceaseless development. Its waves of progress, which have never stayed and have gathered unnoted strength, have simply chanced to break upon the shores of our time with unwonted force. It may be uncertain whether surgery was prehistorically progressive, or whether within the limits of tradition from century to century its advances have been always manifest or without recession. It is unimportant to the present consideration of medical or surgical art to disentangle its history from early fable and mythological romance to determine to what extent it existed in an epoch of barbarism, or in a subsequent era of mediaeval superstition, or even to define the period in which it may be deemed to have acquired a scientific basis. From the seventeenth century, at least, the inclusion of medicine in the field of positive, if not exact, science, is beyond question, and its continued advancement a matter of record. The successive discoveries of the circulation of the blood, of the efficacy of vaccination, and of the possible annihilation of pain by anaesthesia, are imposing landmarks along the path which has been traversed; and all through this time the gradual evolution of a rational system of treatment of disease, and the progressive improvement of methods of surgical interference, are sufficient evidence that the advance has been fairly uninterrupted. The recent detection of pathogenic germs, the heretofore invisible host which barred the way to surgeon and physician alike, was but one of the great victories in the war which for a century and more has been persistently waged against the invasion and progress of disease. It has been followed by an extraordinary amount of fruitful research, widely distributed, both in this country and abroad, and the influence which it has exerted in the study of pathology and in the practise of therapeutics has not been paralleled by that of any previous discovery in the domain of medical science.

This energetic cultivation of a special scientific field, and the affluence of its results, are not to be regarded as isolated phenomena apart from the general trend of thought and

intellectual activity in these later years of the nineteenth century. The age in which we live is eminently practical, and attention has been engrossed in studies of science as distinguished from letters, science as applied to the discovery of such facts as have a definite material value.

The appreciation of intellectual culture, either as an end sufficient in itself, or as a means to the better accomplishment of ultimate results, has been lessened; its necessity as a foundation for technical acquirement is scarcely recognised or inculcated. In American colleges and universities, even of the higher grade, the extent of classical and rhetorical study demanded has been more and more circumscribed, until undergraduates are now practically permitted to pursue such exclusive lines of work as in their unguided opinion pertain directly to their future occupation in life. The surrounding conditions of mental action, and perhaps the contemporaneous mental constitution, incite to scientific investigation rather than to endeavour in the higher planes of literature.

It follows that the arts most sedulously wrought and successfully developed have been mechanical, industrial, or, in some sort, utilitarian rather than aesthetic. The gentler arts of oratory and poesy, and of letters, have not only failed of advancement, but have suffered decadence. The distinguished orator of to-day makes merry with postprandial jest. The voices which come from the tribune, the forum, or the pulpit, have lost in resonance and sweetness; and the persuasive charm, the impassioned and resistless force of eloquence which beguiled or compelled the minds of men, exists only in memory, or is but faintly shadowed in a printed page. The poetry of Bryant and Longfellow belongs to a rapidly-receding past. In the general field of letters, an epoch which is impressed with the genius of Irving and Curtis, which recalls the delicacy and refinement of the period of Addison and Steele, has been definitely closed with the death of Holmes.

It is not to be assumed that the altars of the Muses are



deserted, or that they who stand outside the temple gates are ignorant or of indifferent mind. Popular intelligence is more acute, and popular education broader than ever before; journalism is clever; literary work of higher or more pretentious character is respectable; and the best of literary production, of whatsoever value it may be, does not lack popular appreciation. At the same time, the urgent demand is for tangible results in the betterment of the physical conditions of existence, and in no other direction has the outcome of intellectual force been so conspicuously great. The absolute present, no less than the immediate future, is still pregnant with marvels of mechanism to be derived from the farther study and application of the laws of physical science. The impossibilities of yesterday and the improbabilities of to-day are the assured certainties of to-morrow. No limit has yet been fixed to the applications of electricity, steam, or chemical forces in the practical prolongation of life through the annihilation of time and space; no engineering problem has yet been found incapable of solution; no anticipation of mechanical progress, fairly formed, however extravagant, has failed of realisation. In every phase, life has been increased in value by more thoroughly satisfying its necessities, diminishing its pains, and increasing its pleasures.

It is not only natural, but inevitable, in an age characteristically occupied with the improvement of physical conditions, that the art most directly concerned with the integrity and prolongation of life, without which all other material advantage is naught, should command great attention, make great progress, and receive great honour. This art was one time pursued as was the art of war. Then, as now, great care was taken to learn the dispositions of the enemy; but afterward the campaign was planned and battle given under widely diverse conditions. Strategy in war was brilliant, daring, but of necessity much was left to the arbitrament of fortune. In time of action, arms and ammunition were of uncertain range, and their execution more uncertain still;



and in the end, victory was often gained by some inspiration of genius or by some happy chance. In surgery, diagnosis was often made in the absence of positive data with an accuracy which was marvellous, and by an exercise of the highest mental powers, which seemed like intuition. Operations were boldly conceived, and the genius of the surgeon often turned the scale when danger threatened; but in practice, medication was profuse and empirical, instruments were often illy adapted to their purpose, and the pyogenic germ was an unknown and unsuspected enemy always ready to fall upon a point exposed. From first to last, chance was necessarily a potential factor.

In both war and surgery chance and genius have come to play a smaller part. In modern military art, each element of a complex organisation, every detail of formation, movement, or maintenance, is rigourously perfected, the destructive power of arms and ordnance is accurately determined, the value of position exactly appreciated, and the issue of battle predicated with almost mathematical precision. In the field of surgery, diagnosis, prognosis, and treatment are now founded upon an equally complete mastery of all the elements of a case, derived from a minute knowledge of pathology and a critical and laborious observation of clinical phenomena. If surgical science is not yet exact, and the results of surgical practice are still far from certain, it is in part because the study of elemental facts is incomplete. Another reason exists in the various manifestations of nervous and psychic conditions which are essentially incapable of formulation. The impossibility of predicating the degree of shock which will result from the operative destruction of a given amount of tissue, or of determining the extent of lesion from the severity of a chill, or of solving many similar problems, is probably absolute; but there are lines of study which still promise practicable results, and which are still unexplored or not yet followed to the end. The present status of surgery, as well as of medicine, is to be ascribed to the careful observation and exhaustive investigation of de-

tails, and to a certain extent to a consequent subdivision of labour. Its immediate advances must depend upon a persistence in the same methods. The general acceptance of this proposition determines the most important tendency of both medical and surgical work.

The existing inclination of the professional mind toward methodical observation and the study of rudimental facts has been impressed with certain characteristics which equally reflect the spirit of the age. It is directed not only to scientific induction, but largely to the accomplishment of immediately practical results, and it is generally diffused through the body of the profession, within the limits of individual capacity and opportunity. The discovery of micro-organisms and of ptomaines and leucomaines is hardly recent, but the recognition of their real nature and of their pathic relations is almost within the present generation. The work of bacteriologists since the identification of the anthrax bacillus by Davainne and Pasteur, scarcely more than twenty-five years ago, has been largely devoted to establishing the dependence of various diseases upon the action of specific bacteria and to attempts to evolve means of cure by specific methods. These efforts have met with more or less success, but even when the result has been problematical they have equally enchained popular attention and stimulated professional labour. It may be still a question whether Koch or Edson has formulated a cure for tuberculosis or Pasteur for rabies, or whether the treatment suggested by Behring and perfected by Roux will prove effectual in cases of diphtheria, but there can be no doubt that the work of these distinguished pathologists is illustrative of the practical nature of investigations which are in progress at the present time.

The original discovery of the existence of bacteria and of the animal alkaloids, the gradual determination of their true character, the coincident study of organic chemistry in its relation to therapeutics, and the experimentation in physiology, which afforded such brilliant results in the middle of the

century, were not less important and demanded no less eminent intellectual capacity. These preliminary steps toward the more exact prevention or control of disease are perhaps entitled to an even higher rank in the scale of intellectual attainment than those which have been lately taken nearer to the goal. They were advances made in a light but feebly reflected from the achievements of the past,—the light in which the work of the present must be always done, and which grows always brighter in the lapse of time. The explorers and discoverers of generations so little past, so near in time, yet so far away in the progress of events, must command still profounder admiration for the singleness of purpose with which their successes were attained. They were content to arrive at truth and to follow it so far as they might, but the fruition of their labours was reserved for their successors who were to build upon the foundation which they had laid. Their measure of fame, as fame is reckoned, was not great; the nature of their researches appealed to but a limited number of their colleagues; and beyond the profession they were scarcely known.

It is evident that the present disposition to direct medical and surgical investigation straight to its ultimate object, the cure of disease, while it has grown out of the mental attitude characteristic of the time, has been greatly strengthened by the fact that conditions have been made favourable by work previously accomplished. Physiologists and microscopists, clinicians and pathologists, have so thoroughly established premises that the time has been ripe for conclusions. They have followed convergent lines, which have at last so far merged in one another as to form a broadened course, in which persistence has disclosed the possibilities which we have seen so largely realised. The story of the bacteria, which it has taken nearly two centuries to learn and to which the study of many sciences has been tributary, their history and classification, their life and death, and their pathogenic potentialities, had become well known when contemporary investigators were enabled to write the

final chapter, which reveals in these atoms the proximate cause of disease, and in some instances to touch the limit which has been set to human knowledge in this direction by the discovery of specific methods for their cure. The identification of individual diseases with specific microorganisms still goes on, and efforts to make the poison its own antidote are still unwearied.

The recognition of the pathogenic germ in diphtheria has been but just now succeeded by the discovery of a process of inoculation which promises the most brilliant curative results. The established dependence of the process of suppuration upon the presence of streptococci has revolutionised surgical practice. In this instance the detection of a pyogenic germ has been followed not only by a logical method of cure, but of absolute prevention. It is probably the most conspicuous achievement of contemporaneous surgery; it has enormously broadened the scope of operative interference, and by diminishing danger has correspondingly increased the applicability of procedures already established. It is typical of present methods of minute and laborious investigation directed to distinctly practical results. It is also strikingly illustrative of the gradual processes by which exact knowledge has been attained, and, incidentally, of the progressive improvements in practice which have often anticipated a comprehension of the facts or principles upon which they were founded.

In days not long gone by, but while pyogenic germs were yet undiscovered, and before aseptic laws had yet been formulated, or antiseptic fluids known, Dr. Marion Sims not only did gynaecological laparotomies, as Kimball and the Atlees had done before him, but urged upon surgeons the practicability and safety of similar operations for abdominal traumatism, now counted, perhaps, the highest achievement of aseptic surgery. Dr. James R. Wood had even earlier obtained remarkable results by the open treatment of wounds and the strictest attention to cleanliness as it was then understood.



The present system of aseptic surgery has resolved itself into an attempt to reach an ideal condition of cleanliness by the employment of specific agencies. The immense advantage gained by present methods of operation and treatment through bacteriological studies has not been derived from the discovery of new principles, but from the more perfect application permitted of those already established. It was known that stagnant pus caused a local or general poison, and that open wounds and free drainage, thorough ablution and general cleanliness were essential factors in its prevention or cure. There has been added to these, as a result of much labour in bacteriological and chemical investigation, a knowledge of the proximate cause of suppuration, of the necessity of sterilisation for prophylaxis, and of the use of chemical germicides in septic conditions.

Careful and laborious investigations, founded upon gradually and progressively-acquired knowledge of facts or principles, and tending to directly practical results, are not confined to bacteriology. Closer study of both gross and minute pathology has afforded a basis for more accurate clinical observation. The multiplication of medical journals has farther stimulated clinical research. It has enabled a multitude of practitioners of limited experience to record cases which to them seem of great importance, and if the record is sometimes of no great service to the profession directly, it is indirectly of the greatest value through its reflex influence upon the writer. In no other way can men learn their own deficiencies as observers, or establish the habit of minute and precise, yet comprehensive, notation of symptoms, which enables them to profit in the light of experience. The Baconian aphorism applies,—“Reading maketh a full man; conference a ready man; and writing an exact man.” Publication is like ritualism, perhaps not essential to the end in view, but a necessary stimulus to exertion.

All the agencies which conspire to render diagnosis more exact, increase the precision of treatment,—the point at which



the science is merged in the art of medicine, the end of all professional striving toward its ultimate object, the prolongation of life. Even a simple mechanical instrumentality, the introduction of the clinical thermometer, has so contributed to the certainty of diagnosis, and in many instances so directly guides the course of treatment, that it may be properly ranked with the most important factors in medical progress.

The progressive improvement in methods employed for the prevention and cure of disease has not only followed in the train of more exact diagnosis, but in certain directions has resulted from the direct fulfilment of clinical indications, independent of their origin. Bacteriological studies have unquestionably transcended in importance all other sources of prophylactic or therapeutic advantage. The discovery of facts which have reduced sanitation and public hygiene to an almost exact science, and of the laws which govern the inception and development of infective diseases, have in themselves alone effected a greater saving of human life than have all other recent advances in medicine combined; but an estimate of the progress of therapeutics would be inadequate which failed to recognise the service which has been rendered in other ways, which are to be accounted minor only by comparison.

The use of the Murphy button, or of Maunsell's method of circular enterorrhaphy, which have added incalculably to the safety of operation, exemplify the application of the nicest mechanical skill to the relief of an obvious difficulty without having been presuggested by other considerations. The synthetic products with absolutely definite therapeutic properties, which are the fruit of research in organic chemistry, and which have greatly contributed to precision in medication, are equally typical of the direct interposition of an allied art, uninspired by aetiological investigation, in the relief of morbid conditions. Such examples could be multiplied to an indefinite extent. If the magnitude of the discoveries which have been made in the study of bacteria and

of the animal alkaloids has tended to obscure the importance of, and to lessen interest in, the progress which is being made in other departments of medical science, it is to be remembered that all diseases have not yet been traced to the influence of microörganisms, and that all treatment is not yet to be founded upon the use of germicides.

The position which has been achieved by the medical art in the contemporaneous field of labour is a not more conspicuous fact than its complement, that it has been due to the individual contributions of a vast number of collaborators in all ranks of the profession. There have been, and are still, not only a great number of persons engaged in original investigation in both theoretical and applied science, but in consequence of the very general diffusion of technical knowledge the distinction between leaders and followers, while not entirely lost, has become much less sharply defined; and the professional work which entails the greatest responsibility and confers the greatest honour, which was once reserved to the few, has been brought within the capacity of the larger number, who were a long time content to serve as purveyors to their betters. It is not so many years ago that in a city so large as New York a half score of surgeons were entrusted with practically all the more important surgical procedures. The array of physicians and gynaecologists of corresponding position was even smaller. The records of medical and surgical societies bear witness to the learning, skill, and capacity of the host of younger men who now maintain a rightful place in the foremost rank of their elders.

The causes of the wider and more general professional activity are not difficult to find. In this, as in the inclination to minute and laborious investigation in the pursuit of facts which may be utilised in the attainment of material advantage, we but reflect a general tendency of society at large. The process of intellectual fermentation characteristic of the time permeates every stratum in every subdivision of the social organisation. The nature of the work, which in the progress of events has fallen to the lot of the present epoch,

favours its ample distribution. The qualities of mind which it demands are those which are largely developed in an era of advanced civilisation. Patience, industry, perseverance, the faculty of close observation, the power of careful analysis and comparison, the subordination of the imaginative to the logical faculties, are made common in a learned profession by heritage and education, and are adequate to medical inquiry upon its present lines.

It is not a matter of reproach that these qualities give to mediocrity its opportunity. Men of genius have quite too long obscured the modest achievements of their fellows, and have too often hidden the march of men, perchance of somewhat smaller stature. The masters of talent and of hard-earned fruits of science, who control the present, mark the apotheosis of mediocrity; but if the plane upon which they stand be flat as well as broad, so, too, it is uplifted high, and indeed surmounts even the loftiest summits of past achievement which, though left far behind, still seem in delusive mirage to float beyond our reach. No great convulsive movements have disturbed its surface, but its level has risen to constantly greater heights. No other age has witnessed so much accomplished, such great deeds done in the service of humanity by exercise of the homelier faculties of the mind, and without the impress of great personalities upon the body of the time. The extension of medical knowledge and the perfection of medical art may not now demand the force of originality, or the use of the highest forms of intellectual power, but the vast progress made is not less worthy because the field is open.

The conditions of progress are still unchanged. The knowledge gained in the past has not yet been entirely utilised for the purposes of the present, and methods of investigation and of procedure for practical realisation of its results, which still obtain, promise to be sufficient for the immediate future. It is possible that eventually new departures may be taken for incursion into the realms of disease, but the branching of the ways is not yet in view.

The ethical side of the profession is less admirable, and

less satisfactory as a subject for study. It is not only the methods and purposes of scientific investigation which reflect the characteristics of the age, but no less the manners and the morals of professional men. The age is essentially commercial, and all phases of life assume a corresponding tinge, especially in America, where manners and modes of thought yet remain in an exceedingly impressionable condition. It may be unfortunate or otherwise that the learned professions, especially of medicine and divinity, are illy adapted to the inspirations and methods of business, and wear its garb with little grace. In America the commercial instinct is strongly developed, and the leisure class is not sufficiently large nor far enough removed from its source, to exercise a restraining influence. It seems to have infected the medical profession with great virulence. The indispensable condition of business success is to "hustle," and it has been largely adopted as the rule of action in the pursuit of medical practice. It is an ignoble word and in the vocabulary of a profession of dignity and honour comes to stand for ignoble methods. The word "hustling" is used in business affairs to mean the strain of every effort, every energy of mind and body, tireless activity, fruitful resource, endless pertinacity, and undeviating devotion to the one end in view,—the pursuit of gain. In the middle and lower ranks of commerce it has been held by some to signify additionally a struggle in which all self-respect, short of personal dishonesty, might be cast aside; shameless and brazen assurance made to take its place; and publicity given to their trade, in whatever questionable shape, made reputable so long as thrift might follow. In the profession of journalism it has been sometimes thought to justify ruthless attacks upon private honour, remorseless invasion of domestic happiness, or the wanton despoiling of the dead of secrets which no longer concern the living. Among the gentlemen of that sacred calling with whom decorum was once as near to godliness as cleanliness has been thought to be, it is no longer matter of surprise when here and there some good man, whose fame has been heretofore confined



within the limits of his parish, springs into sudden notoriety by resort to sensationalism in some antic form, puts his name into every mouth, crowds his church with worshippers, and in time subsides. He may change his suit of black for one of motley to seek out vice in its most secret lair, and, with much endurance and little pity, view without shame, if not embrace, that monster of hideous mien; or in the pulpit he may fall into startling discourse laden with personalities and invective, which might put to blush the veriest scold.

In the medical profession, the struggle for notoriety and self-aggrandisement has been less violent, and, perhaps, a thought less grotesque. We give place in all things to the reverend clergy, but in this instance there are more of us in the fray. They of the cloth who are disposed to doubtful paths in the pursuit of fame and fortune are but few, and, so far as the profane may judge, have not gained the approval of the body of their fellows. Those of us who march well to the front beneath the Aesculapian banner and, as well, fight upon the frontier of professional propriety, are many, and have been honoured with the proverbial flattery of widespread imitation.

The time when modest merit won its way through itself alone, probably did not survive the day of Whittington and his cat. Even men of science or learning, or of simple honesty, in actual life are expected to possess some modicum of worldly wisdom. Dominie Sampson, Dr. Primrose, and Jesse Rural are pretty pictures, but hardly models for medical students. Our ingenuous forefather who was called out of church, or who purposely sent the medicine intended for the squire's wife to the wrong house, is no more to be harshly judged than the school-girl in her first flirtation. He had no knowledge of the capabilities of modern journalism or of the base purposes to which they might be put, and, let us trust, would have scorned them if he had. It is not possible to express in set terms what the medical man who respects himself and his profession, may or may not do to legitimately attract attention to himself and his conceded merits, but not



more impossible than it would be in any other profession or occupation in life. An educated general sentiment of society in the first instance, and an intelligent and conscientious application of recognised generic principles of propriety to the exigencies of special avocations or social conditions, will sufficiently establish rules of conduct. This seems to comprise the whole field of professional ethics; and the intuitions of any honourable man ought to obviate the necessity for their formal exposition.

In our time, merit has become overbold, if not disposed to play the wanton. There can be no question that personal advertisement has of late been carried far beyond any possible limit of propriety. Such gross offenses as the placarding in public places of special cures for special diseases, flanked by some name still recognised as of the profession, may be excluded from consideration as too near akin to open charlatanism. The public press, which is responsible for some things which are good, and for many which are bad, has been the most efficient means of vicious individual exploitation. The ostensible journalistic tributes range from the unblushing effrontery of a circus poster to the ingenious elaboration of what is known as a "reading notice." It is true that injudicious friends and unselfish reportorial admirers may place our *confreres*, who are already conspicuous, in a false position. There are, however, instances in which it is difficult to believe that elaborate eulogia with much particularity of time and circumstance are entirely uninspired. Occasional copies of journals have come to hand from distant points of publication, containing full-paged biographies and attractive portraits of our esteemed professional contemporaries, which would have seemed strangely appreciative even if there had not been credible information that they emanated from a "literary bureau," by which they were widely disseminated through the press of the remoter parts of the country. The lengthened description, with careful and minute attention to detail, of ordinary hospital operations, in which the surgeon is credited with having successfully introduced extraordinary and here-

tofore unknown surgical procedures, is familiar in the columns of the metropolitan press. The equally elaborate recitals of operations in private practice, in which surgeon and patient are alike heroic figures, is made *caviare* at the breakfast table through the same facile agency. If the subject of operation chances to be a person of social distinction, it may happen that the malady for which it was done becomes the fashion, and patients who survive the ordeal of the knife could scarce feel more pride in scars received upon the field of battle. Particular operations in the hands of individual surgeons have been so assiduously chronicled that they have come to be thought in some sort preëmpted by those thus distinguished. The craft of the interviewer, a peculiarly American development of journalism, has been much employed for bringing men of our profession in a semi-professional way into public notice. It came greatly into vogue during the period of national anxiety which immediately followed the Garfield assassination, when the public mind became congested with an enormous amount of useless, if not positively deleterious, knowledge. The surfeit has been since maintained by generous contributions from a wealth of personal opinion which has sometimes masqueraded in the guise of infallible authority. Technical disquisitions concerning the condition of patients in whom the general community has some real or fancied interest, the determination of diagnoses in unseen and distant cases upon which the surgeons in attendance have been quite unable to agree, or it may be platitudinous discourses upon almost any subject in which the profession may have an interest, near or remote, or even occasionally timely and judicious statements of fact, have constantly adorned the columns of secular journals. It is, of course, possible again that the blandishments of the man of nerve have sometimes betrayed the worthy doctor against his better judgment, and perhaps against his will; but virtue rarely does succumb without temptation, and repentance does not always lead to reformation. The ways in which the press has been made to illegitimately enhance individual reputation have been too varied to follow in detail.

They have been as effective in the interest of men of unquestioned professional position, as have unconcealed and absolutely shameless advertisements in serving the purpose of the charlatan. It can be hardly doubted that physicians or surgeons in this country, whose celebrity has been exceptionally great and widely extended, have in more than one instance founded and largely maintained reputation upon a newspaper basis. They may be assumed to have been men of ability, skill, and good repute, but the conditions under which we have seen that medical or surgical work is now accomplished, preclude the supposition that their phenomenal success has been due to a corresponding superiority to their fellows whose fame has been more strictly confined to their own profession. It is again still possible that they have been the victims, rather than the too willing recipients, of attentions from the members of the fourth estate.

Not long ago there appeared side by side in adjacent columns of a metropolitan journal, two articles upon the treatment of disease: the one, the advertisement of a plain, unpretentious, open quack; the other, a description of the cure of disease without medicine in a medical college of the highest respectability. It would have been impossible for the New Zealander standing upon the East River bridge to have told whether both were instances of arrant quackery, or whether both were merely *fin de siècle* methods of calling attention to medical progress. He would scarcely have suspected that any ethical difference existed between them.

The number of those who have availed themselves of the courtesy of the press, or of the services of its representatives, is necessarily limited; the lamentable fact in the matter is, not that it has profited a few, but that it is so largely tolerated by the sentiment of the profession.

There is in general a disposition to extol their shrewdness or good fortune, as it is variously regarded, rather than to reprobate or to deplore the position which they assume. It is a question whether he who censures is not more likely to have his pains attributed to envy or to a censorious disposi-

tion than to an honest discontent with conditions and tendencies which he knows to be vicious. Such is said to have been the reward always of those who have ventured to comment upon either the manners or the morals of their time. The present tolerance, if not the quasi or entire approval, of the application of commercial methods to the attainment of professional ends, is in sharp contrast with the rigid attitude held by the profession till within very recent years. It is still within the memory of those who are not of the eldest of the profession, that a surgeon in this city, of great skill and originality, a man of charming personality and brilliant attainments, was utterly wrecked by too much of this species of publicity, aggravated by a habit of consultation with practitioners of a school of medicine then deemed irregular. It is of interest to note that this school is now recognised, so far as concerns the emoluments of consultation, by several prominent medical organisations of the City and State of New York, and that this surgeon's journalistic exploits are now far eclipsed by those of more than one of his successors whose practices and professional repute remain unquestioned.

It would seem that the medical man may now have his portrait and biography published wide through the country press by the proprietor of a "Literary Bureau." While, to quote from a circular announcement, "the marvelous results met with in his practice, confidentially treated, can be got right down among the people" by the manager of another bureau, and at the same time his oracular utterances may be reproduced, and his eminent position and remarkable skill and acquirements may be certified by the interviewer, and in the end he may retain his professional respectability unimpaired, so long as he is not caught *in flagrante*! This is "hustling" as applied to a learned profession. It represents, not criminal, but essentially degrading, courses; it is subversive of honourable traditions, and destructive of the dignity and ideals of an elevated calling, as it would once have been fatal to the self-respect of the physician himself. The well-defined and recognised distinction which has long



existed between the permissible arts of trade and the proprieties of professional conduct has been in a measure lost.

In trade or commerce, every honest artifice may be legitimately employed to add to the attractiveness of the vendor's wares and to promote their sale, and his personality neither necessarily nor usually enters into the case. In a profession, where no tangible commodities exist, and personal attributes, as wisdom, skill, or experience, are the only assets which the possessor can proffer to the community, he cannot vaunt his possessions without exploiting his own person, which is always in bad form. A braggart, which he then becomes, is not considered an agreeable person, and hardly commands respect. The attempt to saddle a profession with business methods is therefore an incongruous proceeding, and he who finds his advantage in it, either in notoriety or in pecuniary gain, deteriorates his own character and helps to demoralise the general sentiment of his profession. If a man conscious of his own great desert languishes in obscurity, his temptation to push his fortunes without too scrupulous regard to the means employed, may be made irresistible by the spectacle of men no better than himself who have acquired both fame and fortune, and tolerance, too, in devious journalistic ways.

The unseemly struggle for precedence and the persistent strife for notoriety have not stopped with the utilisation of the public press. The profession has, indeed, become so fully animated with the instinct of commercial rivalry that the intestine conflict waged to reach the surface has involved the use of every means within its grasp. If the battle be fairly fought and with honest weapons, we have, perhaps, no right to cry it shame, even though good taste and good manners be slaughtered when they chance to come between the eager doctor and his purpose; but when, as too often happens, resort be had to dishonourable artifice or false pretence, and the general conscience of the profession remains without affront, and even honour and consideration attend success, however illy earned, we may well inveigh against



the lewdness of the time. The offenses which are committed against the honour and dignity of the profession in the struggle for place and profit are so varied, so closely connected with the personality of the offender, and often so near the line which separates propriety from impropriety, that it is difficult either to illustrate or to generalise them with justice or precision.

It is the natural right of every man, no less than his professional privilege, to assume, if possible, his just position in his calling; but it is neither right nor decorous that he should arrogate to himself a leadership for which he has no real qualification. If he asserts his presumptuous claim beyond the limit of his craft, he becomes to that extent a charlatan. It is common fame that in our profession we are mainly "colonels," if only by brevet,—“professors,” “experts,” and “specialists,”—and those of us who are still content to be of the rank and file are in number but a beggarly following. The “professor” who does not teach, or whose knowledge and aptitude for teaching are insufficient to fashion even rudimentary doctors; the “author” who simply compiles the results of his predecessors’ labour; the “specialist” who, for his purpose and without warrant, carves out of the whole medical field some absurdly little plot in which he claims a profundity of knowledge, and the “expert” who has no more expertness than his neighbours, are doubtless shams. The standard of classification which is to determine how many of the pretenders to rank are really worthy to lead the march of a great profession, how many are merely pretentious fellows, and how many are charlatans, let him decide who can. It is quite sufficient to the purpose to know that only too many men, whatever their desert, openly or insidiously, by fair means or foul, manage to pose in the glare of a publicity which streams far beyond the boundary of their profession, and are sustained by a very general sentiment which demands only success and a cover of propriety not much wider than the costume worn in the islands of the Southern Seas.

The constant struggle for notoriety and the greed of gain have vulgarised the professional mind and blunted its sensibilities. Very little regard is shown for the weaker or less fortunate by those who are fairly in the saddle, and to them it matters little whether they who block the way are simply thrust aside or are trampled under foot. It has been too much forgotten that ours is a gentle, as well as a learned, profession, though it has followed naturally enough from the almost brutal contempt of moral and intellectual culture which we have seen to characterise the end of the century, and from the consequent subordination of life to what are considered its practical ends. At the outset, men may even cherish ideals, but the atmosphere in which we live is destructive of such unsubstantial fabrics, and conscience by ambition once corrupted, the Rake's progress was not more surely downward than that upon which the doctor enters. He may for a time, after a resort to the "literary bureau" and the resources of the press, strive to delude himself that he is still without reproach, but, like Falstaff, he is apt to find it quite "as much as he can do to keep the terms of his honour precise." It is well if he does not come at last to accept the belief of the maid in Dryden's Epilogue, that honour is so easily lost, "no wit would be plagued with the keeping."

The ethical crimes which he commits are many and flagrant. The rape of cases by consultants and specialists, the assassination, the strangulation, of reputation by coteries who defame or ignore the work of aliens to their circle, the innumerable wrongs which live in honest men's remembrance, together make a story too hackneyed and much too long to tell, even though discretion might permit; no art could weave it so impersonally but full half of those who read would each conceive himself assaulted. The pity of it is, not that such things are, but that the too frequent eminence of the offenders makes their example peculiarly humiliating and pernicious, and that general opinion has grown callous. It is this public indifference to individual offense, this admiration and condonation of successful, even though criminal, audacity, which

has had so many historical parallels and which now confronts us in our own profession, as well as in the larger society of which it forms a part.

The indefensible practices of physicians in their mutual relations have been extended to still more vicious infractions of the sacred obligation which they confessedly hold to their patients. There is only too much evidence that enormities, such as surgical operations not wholly in the interest of the patient, and alarming prognoses not justified by facts or by the real opinion of the physician, are far from unknown; but as they have not even the tacit countenance of the profession, they are happily indicative of nothing more than individual depravity. There are other offenses belonging to the same category, less heinous in character but equally culpable and of more frequent occurrence, which are much too leniently regarded by professional opinion. The practical lessons in physical diagnosis so often given to students in hospital wards at risk of the patients' lives, the utter indifference to the natural sensibilities of hospital inmates, which is the rule rather than the exception, the extortion of enormous fees from people of humble means for comparatively unimportant surgical operations, and the demand from the poorest of compensation so large that it involves to them the loss of the ordinary comforts of life, are crimes against humanity which seem neither to excite remark nor to elicit condemnation. Such disregard or repudiation of the higher obligations of humanity are evidence, if not of a low standard of professional morality, at least of a brutalisation of professional sentiment. The persistent and determined pursuit of notoriety and money has bred selfishness, and the men whose professional duty naturally brings them in most sympathetic contact with their fellows, to whom they are bound in ties of fraternal honour or by the still stronger claims of suffering and dependence, have grown coarse and hard, and ready to cry with Sir Peter, "Damn your sentiments," but without his provocation. An eminent surgeon, not long dead, did not hesitate even to declare that he had never felt a personal

interest in any patient beyond the collection of his fee, and some equally eminent physicians, if less frank in their speech, have indicated as much in their manner.

The success which is welcome, though founded upon the discomfiture or ruin of a rival, the sympathy for pain, which is never felt, and only feigned when policy demands, the oppression of the poor, whose faith has made them helpless prey, and all the varied sins without human penalty, are too often noted to pass for random facts in which the general profession has no concern.

In view of graver offenses against the honour of the profession, the failure to observe its mere proprieties would seem of little importance, were it not a lesson of experience that respect for the dignity of an office by him who holds it is essential to the exaction of that respect from others which alone permits its proper administration. The want of appreciation of the magnitude of the professional calling, or of its formal traditions, is not indicative of a distinctive tendency in medicine but rather a reflection in a different light, or from a different point of view, of the predominating spirit of the age which has made the practice of the medical art so largely a simple business pursuit, as it has of other arts and professions. The proposition having been practically accepted that trades and professions are but different means to a common commercial end, it has been easy to forget that there are still outward distinctions, which it is not only seemly but politic to recognise. This is not more true in medicine than in other of the higher professions. The medical man flits about with a little bag such as the barber carries, and is "Doc" to the "gents" who are of his friends or clientele; the artist sells his canvas to the chromo-maker direct; the author vends his work from house to house "by subscription only;" and the clergyman goes forth in a top-hat and a suit of pepper and salt, very likely mounted upon his bicycle, to combat Satan and all his works; yet they all, as professional men, have as part of their function the elevation and refinement of the community in which they live.



These eccentricities, and such as these, are not occasional instances only, and they pass without comment. The profession which fails to impress a sense of the dignity of its ministrations upon those who serve it, can hardly inspire reverence in those whom it serves. It is not strange that charlatans fairly divide with learned physicians the confidence of the people; or that shallow mountebanks who call themselves agnostics and can persuade the masses who crowd their "lectures" that blasphemy is eloquence, and coarse gibes and jokes which outrage public decency and profane the name of Deity itself, are gleaming shafts of wit, should be able to put the clergy to their defense.

There are, happily, many medical gentlemen to whom such strictures as have been made apply in no particular; who avoid vulgar notoriety, and are not too solicitous for gain; who are conscientious in every professional relation; who recognise the dignity of their art, and the higher obligations which it entails, and who are as invulnerable as Dr. Johnson found Sir Joshua Reynolds. There are some among them, now advanced in life, so distinguished by courtesy of manner and delicate consideration for all with whom they come in contact, that they are said to be of the "old school." If the newer school were other than it is, they who are rather in it than of it, and they of the old school, might be less conspicuous for their virtue.

If the picture of the present manners, methods, and aims of the medical profession is not a flattering one, it will probably be recognised as true by those who have had opportunity and inclination for observation. We are not to be judged wholly apart from the influence of our time. The neglect of intellectual culture, the engrossment in perfecting the physical conditions of life, the cynicism and irreverence, and the contempt of the finer emotions, which characterise society *au fin de siècle*, must in some degree permeate its entire structure. If this consideration is to some extent an explanation, it is still inadequate. The unwarranted and unrestricted extension of commercial ideas and instrumen-



talities to professions like divinity and medicine, which profess a higher mission than personal aggrandisement, is one of the peculiar triumphs of modern democracy. It has grown out of the loss of reverence for ideals, which is included in the general wreck of faith, sentiment, and traditions incident to the establishment of a fancied liberty and equality. It has reduced art, literature, the professions, and trade to a common level and equality of avocation, and left their followers, in whatever field, at liberty to push their fortunes by the same methods to the same end of personal advantage.

It has strangled noble aspirations at their birth, and made life as mercenary and prosaic as it is physically comfortable and complete. It may be useless to protest against popular delusions, but liberty as popularly conceived means license; and there is in truth no equality except in moral responsibility and in death; there is certainly none in mental, moral, or intellectual endowments, nor in social conditions; and political equality is both a delusion and a mask for despotism. It is these fair assumptions, so often mischievous in their consequences, that are in this instance, and in great measure, responsible for the misapprehension of professional obligations, and for the confusion of practice in which the allowable aims and methods of trade and commerce are made dishonourable or degrading in their misplaced application.

It is not difficult to suggest means for improving the *morale* of the profession. The first requisite to a betterment of its estate—a greater appreciation of its dignity and responsibilities, and a more conscientious regard for the personal obligations which it imposes—must be sought in a more liberal and better directed preliminary education, and in a broader culture. The admission to the study of medicine of immature and practically uneducated youth is an evil for which there is probably no remedy while medical schools continue to be private enterprises with no more than nominal state control. This irremediable condition is the less unfortunate since those so heavily handicapped at the start

are unlikely to exercise any considerable influence in moulding professional opinion or in establishing guides for professional conduct. The debasement of ethical standards is more directly chargeable to the larger class with some pretension to mental acquirement, and especially to those who fancy themselves liberally educated after an academic course such as is afforded by American colleges and universities. Their undergraduate time and mental energy, so far as they have exceeded the demands of collegiate and intercollegiate athletic sports, have been devoted in greater part to purely elective studies, in which their choice has been little trammelled by the influence or guidance of their instructors. They have usually inclined, through the influence of their surroundings, toward what are termed the practical branches of learning. At the end, they have acquired a certain knowledge of mathematics, foot-ball, and physical science, with a possible minimum of classical and philosophical training. This, which may be proper equipment for success in mercantile life or in engineering pursuits, or even for the laboratory study of bacteriology, is quite insufficient and unfit preparation for service in a profession which should demand not only mental discipline but a refinement of thought and feeling which comes only from wider and more intimate acquaintance with the humanities. It is only very exceptional men who are able to arrive at this by any acquisition of knowledge in later life, when early mental culture has been neglected. The basic requirement for any radical improvement in the tone of the profession is a change in the methods of academic education for those who are destined to be its leaders. The brief time allotted to the curriculum must be more largely devoted to the study of the ancient classics and of polite literature, to the philosophy of language and of history, and to moral and intellectual science, which together constitute the only means to the mental cultivation for want of which the learned professions have especially suffered in their ethical development. It is this mental crudeness which is largely responsible for the multitude of

vagaries which afflict society in general, and for its absorption in the pursuit of material advantage, and its contempt of any infusion of natural sentiment; specifically, it has engendered an insensibility to the higher duties of the medical profession, an indifference to the requirements of its dignity and honour, and a lack of appreciation of the moral obligations of professional men to one another. It is not to be expected that any considerable number of those subjected to better and more advanced methods of intellectual training would attain to eminent scholarship, which is perhaps incompatible with the active work of professional life, as it is certainly unnecessary to the full understanding of its responsibilities; but it would result in a much higher average of mental culture, and this would make possible a fuller comprehension of the exact aims and obligations of the profession, and thus presumably lead to an amendment of its manners and morals, which are now just matter of complaint.

The same advantage which would be afforded by a change of academic methods is to be derived from a revision of the character and conditions of medical instruction, the faults of which are even more strongly accentuated, though their evil results may be more restricted. There is a more exclusive limitation of teaching to the simple conveyance of facts, and a neglect of effort directed toward mental discipline which is absolute. The teachers, with whom teaching is in fact only an incidental occupation, are usually immersed in the cares of private professional practice, and are only too often devoid of special aptitude or the necessary mental training to fit them for the task they have undertaken.

The schools are excessive in number, and established as business enterprises in sharp competition with their rivals, rather than as institutions of learning. The course of study is neither methodical nor systematically progressive. The students are permitted or encouraged to waste their time, engross their attention, and muddle their intellects, with clinical demonstrations before they have acquired even the

rudiments of medical or surgical knowledge. They are practically irresponsible and undisciplined outside the class room, and there is no attempt to give them a community of interests or of sentiments, or to surround them with a distinctive atmosphere, beyond that afforded by the routine of instruction such as existed in academic institutions before the introduction of that elective system of studies, which has proved so destructive to the best influences of university life upon character. The most pretentious schools, and those conducted under the most favourable conditions of prestige and endowment, have made no important advances in system or administration.

If medical schools could be limited in number, and subjected to actual in place of nominal governmental control, their faculty of instruction selected for special qualification and paid a stated sum for exclusive service, and students given a thoroughly systematic training with proper attention to mental discipline as well as to their acquisition of fragmentary knowledge, some defects in preliminary education might be remedied and the tone of the profession might be vastly improved.

The possibility of elevating the present ethical standard of the medical profession exists essentially in the realisation of these suggestions as to education, both preliminary and technical. "There are many events in the womb of time which will be delivered," and there are many which are much more improbable than an ultimate belief that after everything else in the world worth having has been attained, a higher mental culture may be desirable. The pendulum has so far swung in the direction of almost exclusive devotion to material interests that it must in the nature of things swing back toward intellectual culture, as after all the factor of greatest importance in the problem of human life.

There may well be included in the scheme for a broader and higher education the culture of that phase of character which is neither altogether moral, nor intellectual, nor yet simply instinctive. It perhaps might be better called the



nucleus than a phase of character, since it is its essential part, and though modified by moral, intellectual, or external circumstance, still retains its intrinsic quality, which makes the individuality of the man. It is the manifestations of inherent nobility and generosity and their conflict with inherent baseness and untoward circumstance which give to history and to fiction their charm, and make the heroism, romance, and poetry of common life.

The struggle goes on as well within as without the human breast, and too often no extraneous aids suffice to restrain the ascendancy of evil. The continued existence of a sordid spirit, and the addiction to questionable if not dishonest practices, is not incompatible with a high degree of moral and mental culture, just as an innate nobility of soul may irradiate the meanest conditions of life.

There are certain instincts and habits of thought and feeling which are accepted as the attributes of a gentleman without the necessity of definition or generalisation. They are independent of rank or social surrounding, as they are of education or systems of morality, though greatly favoured by the refining influence of either. Sir Philip Sidney or Colonel Newcomb was no more a moralist than was Major Dobbin a man of breeding and culture. The antithetical examples derived from history or fiction, or from narrower personal observation, of men of morals and of religious convictions or of parts and learning, who fail in their conduct to recognise the demands of personal honour, are quite too familiar to require suggestion. In the medical profession, in which of all vocations the rigorous observance of these requirements is most essential to the maintenance of necessary fraternal relations and to the exact discharge of professional duties, there is an astonishing number of shameless offenders, ranging from the famous Dr. Firmin of fiction to the professional neighbour or rival who is to each one of us the particular embodiment of this failure as it occurs in real life. Though possession of a nice sense of honour is rather a gift of nature than an acquisition of artificial growth, and



the sentiments which it inspires as well as the actions which it occasions are to a large extent instinctive, the ordinary coarser appreciation of the distinction between right and wrong in its purely aesthetic sense, which makes the average man fairly truthful and honest, and, in some small degree, even magnanimous or generous, is quite susceptible of cultivation both by precept and example. In this direction some hopeful effort may be made to elevate the tone of the profession regardless of the success or failure of the attempt to improve its preparatory training or to broaden its culture.

It may be impossible to inculcate by formal precept alone, in a professional school or elsewhere, the development of these intrinsic virtues. In the broader field of society the greatest and the purest and noblest teacher of our century, the burden of whose theme was simple faith and honesty of purpose, kindness, and human sympathy, whose hatred of sham, vulgar pretense, and of all the petty meanesses of life, made him cynic and satirist to the multitude, has to this end used example as the basis for the lessons which he taught. In the commoner walks of life the influence of personal example, so generally undervalued, may be within its narrower limits no less far-reaching and effective. In this later age of iron, with its hard practicality and its relentless struggle for precedence in wealth and position, there is no greater need than for some infusion of that chivalric spirit which half redeemed the coarseness and ignorance of the mediaeval age, and for something of the fine sense of honour, the unswerving devotion to the unwritten law, *noblesse oblige*, which in later epochs and in spite of profligacy, cruelty, and oppression made life heroic. In the medical profession, he who can teach the lesson of a noble life, or with humble consciousness of all his weaknesses and imperfections, strive to approximate its ideal as best he may, achieves the only great reward within his grasp. Fame and fortune are better sought in other fields; its honest gains are paltry recompense for unceasing toil, and great names in history are still carved with the sword, not with the surgeon's knife.

The single compensation it has to offer is sentimental, and even this is reserved for those who are still reverent of its traditions, who possess an exalted conception of its responsibilities, who are enamoured of its labours, and who find in the consciousness of an honourable duty well performed the sufficient return for a life-long devotion to the service of humanity. Twice happy he who at the end has secured beside some small portion of either the love or veneration of mankind.

The medical art, when inspired by sympathy and guided by a full sense of its serious responsibilities in the relief of suffering and in the preservation of human life, yields precedence in the sacredness of its mission only to the ministrations of the church, and is worthy of the chivalric regard of the best of men; but practised as a simple business occupation, and degenerated to a vulgar scramble for the gain it brings, it is but a carrion trade, and they who practise it are no longer ministers of mercy, but prowlers in the shadow of the tomb, who find their profit in disease and death and fatten on decay.

## THE ELONGATION OF RETRACTED MUSCLE IN CLUB-FOOT.

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The word elongation is used in this title in an objective sense, and has been chosen in order to indicate a method of removing the deformity of talipes and of restoring the function of the foot, in contradistinction to the method by traction of the shortened muscles, or by lengthening their tendons by tenotomy.

When an approximation of the points of origin and insertion of a muscle has existed uninterrupted for a period of time, the structure of the muscle shortens and does not yield to either active or passive motion of the joint. It is then said to be retracted; and its condition is thus distinguished from a *contraction* of the muscle, where the shortening is temporary and the approximation of the points of origin and insertion of the muscle is the result and not the cause of the shortening of the muscle. It is evident that a muscular contraction, if maintained, may result in a condition of retraction. In other words, a retraction occurs *passively* while its points of origin and insertion are resting quietly in a long-continued approximation, or *actively* while these points are drawn together by a series of spasmodic contractions which never allow a relaxation of the muscle to its full length.

In club-foot acquired after birth, whether occurring as a sequence to the various forms of paralysis, or from trauma, we have opportunities to study the formation of this deformity. The causes of these acquired forms are numerous; but the principal ones are those arising from conditions existing

in infantile and in spastic paralyses. We also may find talipes due to malformation, occasioned by muscular retractions arising in the course of disease of the ankle joint, or from habit necessitated by some peculiarity of other parts of the body. The appearance of the congenital talipes not only in the variety of its distortion, but also in the variety of behaviour on the part of the retracted muscles, suggests origins similar to those found in the acquired talipes. At any rate, the similarity above alluded to affords material for speculative theory regarding the causation of congenital talipes until we are in possession of facts regarding the formation of club-foot during foetal life.

While acquired talipes is classified into four varieties, and they and their combinations are all from time to time met with, the form of equino-varus is of the most frequent occurrence and in congenital talipes it is almost the only form met with. I have seen no other form of congenital talipes, although other forms are on record, except in connection with other congenital malformations which predominate and remove the case from any classification with talipes proper.

In acquired talipes, the variety is generally determined by the accidental position in which the foot may be placed by the circumstances connected with its causation, and if proper means are adopted to counteract that tendency during its existence, we prevent the formation of the club-foot. During the existence of infantile paralysis, the most frequent cause of acquired club-foot, and a paralysis of a marked regressive character regardless of whether it is of a central or peripheric nerve origin, we find that the extensor muscles regain power faster and to the exclusion of any gain in the flexor muscles.

Whether the patient is sitting or recumbent, the foot naturally falls into a position of extension, the approximation of the posterior tuberosity of the calcaneum to the back part of the condyles of the femur causes the retraction of the gastrocnemius and soleus muscles, and we have an equinus talipes. In the attempts of the patient later on to assume a vertical position, he finds it impossible to get the heel to the



ground, and, as to walk or stand on the toes is impossible in a case where the limb above the foot is more or less weakened, the foot is twisted at the anterior part of the tarsal articulations by throwing the toes inward and upward to form *varus*, or outward and upward to form *valgus*; the foot thus shortened permits, in talipes varus, the weight of the body to be received upon the posterior and outer part of the tarsus, and the foot thus presents a "clubbed" extremity. The points of origin and insertion of muscles affected by this twisting of the foot are those of the two tibial muscles and of the long flexor of the toes; the continued approximation of these points causes the retraction of these muscles. The process is permanent and progressive when once started, and ends in the atrophy and disappearance of the muscle. Every successive gain in power of the more vitalised muscle only adds to or hastens its eventual loss, because of its retraction and because of its overpowering the stimulus to its growth, which is derived from an opposing muscular force. The weakened flexors of the foot—the principal ones of which are those rendered useless by the twisting (*varus*) as already explained—become atrophied in their turn because of the inability to perform their function unaided.

This description is given as an illustration of what occurs to the muscles, and to the foot in other forms of the distortion of acquired talipes; and, by speculative theoretical reasoning, it may be instructively applied to congenital talipes. We thereby arrive at an appreciation of how the restoration of the form and functions of the foot can be accomplished without sacrificing any of its integrity, as is done when a tendon is lengthened by tenotomy and its muscular continuity is left in its shortened condition. Although the immediate restoration of the form of the foot is often, but not always, a great inducement to the employment of tenotomy, the damage in reference to the possibilities of its future usefulness can only be seen years afterwards. As showing the tendency of tenotomy, an illustrative case is here given, with the remark that it is intended only as an illustration:

A young man presented himself with the foot showing a well-formed talipes calcaneus; the posterior end of the calcaneum rested on the floor in a line with and directly underneath the tibia; it was covered with a dense mass of "callous" tissue to receive the weight of the body; the anterior end of the calcaneum was thereby thrown upwards, and the metatarsal bones dropped downwards to the floor and towards the posterior end of the calcaneum, and were useless. The foot was unsteady from the ankle, because of the tendency of the posterior end of the calcaneum to rock forwards of the vertical line of the leg; this was counteracted by a heavy iron bar attached to the sole of the boot and passing up the back of the leg; this would always have to be worn to enable him to go about. The leg below the knee was composed of its two proper bones, and the integument; not a particle of muscle or connective tissue could be traced. His had been a case of congenital equino-varus, but a succession of eight tenotomies performed at intervals of a few years as the muscles became retracted, resulted in less and less muscular tissue. He was the son of a very prominent surgeon, and these tenotomies were done at a period when it was a comparatively new operation.

Now, it will occur to any who consider the manner in which talipes is formed, that it is easy and scientific to anticipate and prevent its formation by mechanical means, which limit or confine the movements of the points of origin and insertion of a muscle until such time as the two sets of muscles concerned in the motion of the foot are able each to do their quota of such work. This same consideration will teach one a great deal in removing the distortion after it has become well established. The point needing most observance is to use firmness but not violent force—or, in fact, no force at all. If the foot is held mechanically in such a position that the approximation above described will not increase, the retraction of the muscles gradually relaxes and their opposing set of muscles gain power; and both sets, stimulated by their reciprocal action, gain miraculously almost their function. This gain is more rapid in congenital than acquired paralysis, but even in old, acquired cases it is very evident. Recently a man aged forty, with equino-varus acquired in infancy, has regained power within two years, so as to be independent in

the use of his foot. The foot should not be pushed or undue violence used ; that only excites reflex muscular action and causes pain and unsupportable chafing.

I have said nothing as to the malformation of the articular surfaces concerned in talipes. It is unnecessary in a practical paper to dwell upon them. They disappear as thoroughly under this physiological method of retracing the steps of the formation of the deformity and have not, even in advanced cases, failed to yield to a gradual reposition of the foot. A new born congenital case requires one or two years, and perhaps a period of two years more biannual observation, but an adolescent or adult case may vary from two to four years.

# FUNCTIONLESS ORGANS. ARE THERE ANY? THE USE AND DISEASE OF THE APPEN- DIX VERMIFORMIS.

By NELSON L. NORTH, M. D., of Kings County.

October 13, 1896.

When I made answer to the request of Dr. Denison of the committee of arrangements that I would read a paper at this meeting, I asked for time to formulate a title for the subject I proposed to write upon, and afterwards gave the one that appears in the programme of these proceedings, viz.: "Functionless Organs. Are There Any? The Possible Use of the Appendix Vermiformis:"—an imperfect title for the subject in hand.

Before I had written a word or had done more than contemplate the subject at my leisure moments, and while I was thinking how best to present my thoughts in favour of what I supposed to be the real truth,—that the human organism in its normal condition was nearly perfect in all its parts and that every part was peculiarly adapted to accomplish its own portion of the economy of the completed whole, I opened the *Medical Record* and read, under the heading of "Rudimentary Organs," by Cora H. Flagg, M. D., as follows:

In all of the higher animals we find a large number of structures which are either absolutely useless or of such slight service as to bear little or no relation to the existing life or wants of the animal.

Those parts which are absolutely functionless are, strictly speaking, rudiments, though it is hard, in many cases, to make a distinction between them and those that have so far degenerated as to be of slight or doubtful value.

A very liberal interpretation of the subject would make it



include those structures which were formerly of greater physiological importance than at present, or parts that may be in a state of transition, and even those are merely pathological in significance.

All rudiments are characterised by their great variability, either in size, form, sex, time of occurrence, or their entire suppression. They are often a source of decided disadvantage and even danger to life, as in the case of the vermiform appendix.

Evolution, in the article quoted from, has certainly an enthusiastic advocate, and the prize essay of the author is very pleasant Darwinian reading; only, we are inclined to think in running over her enumeration of man's "rudimentary organs" that man is after all "a kind of nature's patch-work," and a great way from a perfect or complete organism, with all his "functionless" *fag ends* of former existences as sources of "decided disadvantages and even dangers to life" in the ease with which they are thought to take on diseased action and become "merely pathological in their significance." We are inclined to exclaim in the first line of Shakespeare's often quoted climax, and say in the deepest irony, "What a piece of work is man!"

And to continue the parody:

"How ignoble in origin!  
How infinite in rudiments!  
In form and moving  
How like his prototype!  
In action, how like an animal!  
In apprehension how like a (heathen) god!  
The *fag end* of creation!  
The combination of the (lower) animals!"

But, seriously, let us further consider this matter in the light of facts, because, you know, it is a somewhat easy matter to theorise, particularly if you follow some one else's *ipse dixit* and lay down matters as truths simply because you have read them in a book—an occurrence all too common with medical theorists, if not with other medical writers, as exemplified by the statement of Louis, which has been copied successively by works on practice of medicine during most

of the century, that pulmonary phthisis invaded the left lung first in a majority of cases, which is susceptible of abundant proof to be exactly contrary to the facts in the case. We have not to go far back in medical literature for statements to the effect that so important an organ in the digestive and blood-making process as the spleen, was utterly *functionless*, except as a possible reservoir for the blood during congestive conditions. So, also, with several of the other glandular organs, heretofore supposed to be wholly functionless. It is coming to be well understood that instead they are haematopoietic, and hence of singular importance in the assimilative process of tissue building. That important functions, heretofore unsuspected, belong to the thyroid and thymus glands, is assured by careful experiments and investigations, and the study of symptoms of the diseases to which these glands are subject.

Even the tonsils, the glandular organs which have borne all sorts of abuse from cauterisations, incisions, and excisions, are beginning to be looked upon as "guardians of the fauces" arresting in their follicles marauding bacilli, or overtaking them with germicidal secretions, or bearing in their own bodies the force of the toxins which would otherwise get deeper down and attack the citadels of life's forces.

So it may be that the poor appendix vermiformis, so often referred to during the last few years as the death-inviting, functionless rudiment of a former existence, may be found to have been created or evolved for a purpose, and not intended to be sacrificed to the surgeon's knife without mercy, whether guilty or not guilty of diseased action. It is fairly supposable that, whether man was created instantly, by the fiat of God, or by the slow process of evolution, the design was to make a perfect being. It is not fair to suppose—conceding even that that origin dates from the very lowest and first condition of life—that all through the extended process of evolution there should be, of necessity, traces of the changes in the multitudinous rudiments of former conditions, useless and even dangerous for the life that now is,

in that they so easily take on diseased action and become only "pathological in their significance."

Rather, let us suppose that an Almighty God—or, if you prefer to say, the conservative, all-powerful force of Nature—would have improved at each turn of the evolution process, and so we should have discovered that every part of the human organism, however its apparent insignificance, has a use, and should not be sacrificed without good and sufficient reason therefor.

The numerous follicles or glandular structures of the appendix vermiformis show evident secretive or secernent action, and it is quite possible that from these, as from glandular bodies of a like character in the lower portions of the ileum, secretions are thrown out which guard the ileo-caecal valve and perhaps hinder the passage of the colon bacilli or other hurtful bacteria, and so tend to preserve the normal condition of the parts. Of course in a diseased condition, as in appendicitis, all this is changed, as Dr. R. T. Morris<sup>1</sup> well puts it, believing appendicitis to be an infective, exudative inflammation. He says, "When such an area of infection is produced, bacteria at once enter the lymphoid structure and the cellular coats, the stage of exudation begins, and the tissues are compressed by the exudate."

Then, again, a careful study of the form, location, bearing, and action of the appendix vermiformis would indicate its primal use or function, as an automatic closer or "draw string" to the ileo-caecal valve. Its cavity being filled with gas, naturally riding upwards, like the "ball valve" used by plumbers, and so drawing the mucous folds of that valve in coaptation, thereby preventing the regurgitation of the foul gases of the colon,—the receptacle of all that is vile to taste and smell—till the process of digestion and absorption shall have been accomplished. I have thought of it sometimes when I have been in conversation with a person having an especially bad breath, and wondered whether his ileo-caecal valve wasn't altogether out of order, so that the hydrogen

<sup>1</sup> Sajous' Annual, 1896.

sulphides and other gases of his colon were flowing interruptedly upwards, instead of normally—with the proper anal check—downwards.

Such an aid, as described, to the forcefulness of the ileocaecal valve, while it would prevent the escape or regurgitation of the gases of the colon, would not prevent the passage of the faeces into the colon through the *vis a tergo* of the vermicular action of the small intestines.

While looking up this subject of the appendix vermiformis, I have been startled with the number of cases of appendicitis reported and referred to, surgeons whom I had hardly known before referring to their own operations by the fifties and hundreds. This fact, taken in connection with the frequent mention in the daily press of cases of deaths of more or less prominent individuals, either with or without operation, from the same cause, and the further fact of hearing in my own neighbourhood so often of individuals, whom I had recently seen in perfect health, being brought from some hospital dead with appendicitis, has led me to propound these questions: Are we suffering from an epidemic of this disorder? Have there always been just as many of these cases and we did not know it through failure of diagnosis? Is the present mode of handling the cases faulty?

To seek an answer to the first of these questions, I visited the health commissioners' office of Brooklyn and consulted the death record. Here I was met with an obstacle at the outset,—the frequent change of the name of the malady during the last decade. It was perityphlitis, typhlitis, and appendicitis, besides numerous other complaints that might be considered, through faulty diagnosis, to mean the same thing. So I counted up everything of the peritoneal, obstructive, or colic variety of intestinal disorders, and found, notwithstanding the great advances in abdominal surgery, the improvements in technique, and the great decrease of the fatalities after operation (as the numerous reports show), that there had been a marked increase of the death-rate from these diseases during the last fifteen years, and par-



ticularly during the last five years. Here are the figures as obtained from the Brooklyn health office. It is not to be supposed that Brooklyn is worse off than New York or elsewhere in this matter. The table does not cover all the years of the period named, but will make a fair average.

TABLE OF PERITONAEAL AND OBSTRUCTIVE DISEASES AS OBTAINED FROM THE BROOKLYN HEALTH DEPARTMENT.

NAME OF DISEASE.	No. deaths during year 1890.	No. deaths during year 1893.	No. deaths during year 1899.	No. deaths during year 1890.	No. deaths during year 1892.	No. deaths during year 1893.	No. deaths during year 1894.	No. deaths during year 1895.
Peritonitis.....	75	144	167	139	145	164	104	77
Perityphlitis.....	6	7	7	10	7			
Typhlitis.....		4	5	4	8	2		
Appendicitis.....					28	42	74	66
Intussusception.....	14	14	11	21	18	21	17	19
Obstruction of the bowels..	1	29	39	35	40	37	48	62
Colic.....	5	10	6	3	4	6	71	79
Perforation of intestine.....			2	1			3	
Ulceration of bowels.....	9							
Perforation of vermiform appendix.....	5							
Constipation.....	15			1				
Total deaths from these causes.....	130	203	238	214	250	272	317	303
Total deaths from all causes during the year	13,222	18,061	18,480	19,827	20,807	21,017	21,183	22,568
Percentage of deaths, about	1%	1½%	1½%	1 1-10%	1½%	1½%	1½%	1½%

In the years 1890 and 1895, there was a slight decrease in each from the year preceding it; otherwise there has been a continued increase in the percentage of deaths from these causes during the last fifteen years.

It is obvious then that if there are more deaths from these causes, there must be more cases in the aggregate, or else the treatment is faulty. It is not probable that our health authorities will declare these diseases, nor the one disease recently called appendicitis, epidemic, or institute any other means to have the cases reported so that we may know whether it is really on the increase. We can, however, consider the possibility that there may be fault in the present mode of management. It would seem to be quite evident

that the fault is not with the operative procedures of the surgeons, as the methods used, with the care in technique, and the improvements in treating the stump, and the ever-careful antiseptic methods insisted upon, leave little room for improvement. It remains then to be discovered whether the strictly *medical* treatment may not be susceptible of improvement in its methods.

It is strongly suspected that in this form of disease, at least, *medicine* has not kept pace with *surgery*. She seems to have partially forgotten what men of the last generation, like Willard Parker the elder, for instance, used so often to reiterate, that surgery is the opprobrium of medicine or the medical art; that to amputate a limb, however neatly or successfully done, is but to acknowledge a failure of medicine to cope with the conditions that made amputation a necessity; and that successful laparotomy, though speaking volumes in the praise of surgery as an art and a science, and though in the most emphatic manner redounding to the glory and appropriate praise of our surgeons, many of whom with indomitable energy, perseverance, and persistence, have practically operated in the very face of death and have actually conquered the "King of Terrors" for the time being. I say these marvellous procedures in surgery but show the necessity that calls for their performance,—the humiliating fact of the failure of medicine *per se*.

And with the condition now known as appendicitis, I strongly suspect that medical men—and by medical men I mean the general practitioner of medicine as distinguished from the surgical specialty—have not been equal to the circumstances in the case, but have somehow yielded to the clamour for operative procedure, and have in a great measure failed in the initiative treatment, which should have prevented the necessity of many of the cases going to the surgeon.

It seems to me just now that many—I had almost said most—of our general practitioners, when they meet a case of pain in the abdominal region, particularly in the lower right side, just throw up their hands (as it were) with fear,

and practically do nothing. They seem to stand aghast lest they shall incur the censure of the surgeon for having "masked the symptoms" with medicine or having delayed too long before calling in surgical aid.

I remember when I was a medical student,—some years ago now—my preceptor, a keen observer of symptoms and events, and withal a rarely successful practitioner of medicine, said to me, "North, I cure lots of my patients, and particularly half-grown children with stomach ache, with Dover's powder!" and so he did.

I marvel that the medical profession have so soon unlearned the lessons patiently studied at the bedside, and so persistently taught in didactic and clinical lecture by men of such towering intellects as the late Alonzo Clark and his coadjutors, less than fifty years ago!

I know there have been great advances in many ways since the discovery of bacteria and the promulgation of the germ theory of disease.

I well understand also that preventive medicine has greatly gained in efficiency through the study of the nature and habitats of these germs, and the consideration of the destructive toxins which they produce, and that these studies have been made useful in understanding the nature of disease itself, as well as in preventing its development in the human organism.

I also give due credit to the improvements in pharmaceutical products, and that the application of those products looking to the destruction of the disease-producing microbe has tended to make therapeutics more strictly and exactly a science, and that the development of the serum therapy and the serum treatment of disease in the use of antitoxins have been the results of profound research and careful study and as such are deserving of great praise.

Yet I cannot rid my thoughts of the ghostlike presence of a possibility that the practice of medicine *now*, instead of being in a settled condition and having the complete confidence of the medical profession itself, is, on the contrary, in

a condition of doubt! Men hardly knowing what to do for the best good of their patients!

Isn't it possible that the tried, effective remedies and methods of the past are too much neglected for the new remedies and untried ways not altogether well understood? Is not the practice of medicine now in a kind of transition state, and so less effective than it ought to be? In the rapid accumulation of new thoughts and new material, are we not inclined to forget and neglect the wise things of the past? Possibly we may be spending our time, like the Athenians in Paul's day, in nothing else but "either to tell or to hear of some new thing." Our fathers in medicine were neither fools nor ignoramuses; on the contrary, many wise men lived previous to the time of the present generation. It would seem as if an impression prevailed just now that a medical book bearing a date previous to the eighties or nineties was hardly worth the reading; that the thoughts of the old masters in medicine upon hygiene, diet, etc., are obsolete; and that the grandly curative effects of some of the old remedies, and some of the old ways of management of disease, are hardly worth consideration. Is this quite right? Is it well to ignore or neglect the use of old remedies having well-known power over disease?

Is it well to forget the cures effected by opium, for instance, in the peritoneal diseases? Opium in the peritoneal inflammations does more than ease pain: it is antiphlogistic; it is curative; given in the early stages of peritoneal complaints, it allays irritation, retards the capillary circulation, insures rest to the parts, and so prevents, in many cases, the development of more serious symptoms and conditions.

I am convinced, from a more or less varied experience of more than forty years, that opium *cures* peritoneal diseases. Not always, of course, but in very many cases, when used intelligently, promptly, and persistently.

I think if our medical men, at this juncture, when called to treat patients with abdominal diseases, would in the early stages more often give mild cathartics, as castor-oil or calo-



mel, and relieve the rectum and colon with enemata containing a small portion of turpentine or glycerine, and then place their patients moderately but positively under the influence of an opiate, and hold them there for a sufficient time, giving salicylate of soda or salol to counteract rheumatic tendencies and correct sepsis, the number of developed cases of appendicitis would decrease. While the satisfaction of a positive diagnosis might be lessened, yet it is believed the percentage of deaths from peritoneal causes would decrease also, instead of showing an increase, as is the case at the present time.

And then, if we pay less attention, as physicians, to Darwinism and the idea of functionless rudiments being scattered here and there throughout the human organism, to be gotten rid of by the surgeon's knife or the actual cautery, it possibly may be better for our patients. Possibly, if we study aright human anatomy and physiology, discarding theorists and theories, we shall discover the perfection of beauty, the infinite harmony, adaptability, and usefulness of each and every part of the wonderful mechanism of the human body, so that we shall be led to exclaim, in all earnestness, with Shakespeare's Hamlet,—

“What a piece of work is a man ! how noble in reason ! how infinite in faculty ! in form and moving how express and admirable ! in action how like an angel ! in apprehension how like a god ! the beauty of the world ! the paragon of animals !”

#### DISCUSSION.

DR. JOHN CRONYN, of Erie county, said that the last observations in the paper corresponded with the first few lines of Gregory's famous work on “The Practice of Physic.” The surgeons had come to the point of saying that medical men knew nothing about appendicitis. Between 1850 and 1854, the whole world was agog with the notion that the constitution of man had changed, or else that there was a change necessary in the treatment of disease. Since that time, evidently a constitutional change had been going on. We might account for the frequency of appendicitis at the present day on that basis, but personally he was more disposed to

agree with the reader of the paper, that medical men, instead of endeavouring to treat these cases medically, threw up their hands and turned the patient over to the surgeon. He had seen many instances of what was formerly called ileus, then typhlitis, then perityphlitis, and then paratyphlitis. These cases did not differ materially from one another. Iliac abscess was really much more common than the cases now so frequently operated upon. If the medical man would clean out the bowel with a large dose of calomel, place a few leeches over the caecal region, apply an ice-bag, and prescribe a liberal dose of opium, there would be fewer cases in which it was necessary to remove the appendix, notwithstanding the seeming "epidemic" of appendicitis.

DR. WILLIAM M. BEMUS, of Chautauqua county, said that he had had some experience with the medical treatment of appendicitis, and he had found that in addition to the opium, it was very beneficial to use an ice-bag, and also cold water injections. The latter were not very well borne by the patient, but they certainly were beneficial. He would ask Dr. Cronyn whether he considered the ice-bag or the poultice the better application.

DR. CRONYN replied that this depended upon the stage at which the case was first seen. If quite early, the ice-bag was better; if later on, the poultices should be applied.

DR. DIDAMA said that it was not very long ago when quite a number of organs in the body were considered useless. We wondered what was the reason for the presence in the body of the ductless glands, but we now know that they were valuable. For example, a fat man could take thyroid extract and become thin; cretins by its use became bright and intelligent members of society. He believed that an extract of the pineal gland was now coming into use in the treatment of insanity. An extract of the suprarenal body was also being made and used. He believed it was made in St. Louis, where so many of these preparations came from. All these things were formerly described in a well-known book as "vestiges of Creation." When he had begun the practice of medicine, there were different forms of typhlitis. There was one form which was due to the ingestion of too many chestnuts, or something of that kind, and it was cured promptly by a purgative. At the present day, such a case would be operated upon at once. It was well known that after a few days the affection extends to the appendix, if it begins anywhere in that neighbourhood.

Physicians who did not practice surgery much and witness these operations, were much impressed with the value of surgery; it was of undeniable use in many advanced cases. A surgical friend had told him that he had frequently opened the abdomen and found the appendix all right, so he had closed the abdomen, the patient had got well, and the surgeon had simply received his fee.

## NOTES ON THE TREATMENT OF FAECAL FISTULAE.

By FREDERICK HOLME WIGGIN, M. D., of New York County.

*October 13, 1896.*

The three cases to which it is the chief purpose of this paper to call attention, seem to be of sufficient general interest to warrant their presentation for consideration and discussion. All of them were successfully treated by surgical procedures—one by enterectomy and anastomosis, by the method of Maunsell; and the others by enterorrhaphy. There are few conditions to which patients are liable that cause them greater mental and, at times, bodily distress, than do the occurrence and persistence of a faecal fistula. While it produces directly serious disturbance to bodily nutrition only when it is situated at some distance above the ileo-caecal valve, it indirectly causes bodily deterioration, as wherever located it causes much cutaneous irritation and entire loss of control by the patient of the intestinal contents, rendering those so afflicted most offensive, in spite of all that can be done for them by means of pads and trusses, and limiting their usefulness during the duration of the defect.

The most frequent cause of the occurrence of faecal fistula may be stated to be the delay in resorting to operative measures for their relief, to which patients suffering from typhlenteritis and strangulated hernia, whether it be of the internal or external variety, are too often subjected while their ailment is carefully diagnosticated. Among the other more common causes, are the employment of drainage following abdominal operations, especially by means of tubes; imperfect technique in operations upon or about the intestines; as



a result of an ulcerative process within the gut; or from gunshot or stab wounds. A recent writer on the subject under consideration stated that, in his opinion, "the best treatment for this condition consists in its prevention, when possible, by a resort to early operation in those cases in which the occurrence of a faecal fistula is a possible result." In this view the writer of this paper heartily concurs.

But in a case in which this dread condition has followed in the train of some intestinal disorder, whatever the cause, what course should the physician advise his patient to follow, to the end that he may be relieved from his distressing disability with as little risk to life and the least possible inconvenience? As is well known, many of these fistulae gradually contract and close spontaneously; and, therefore, it is well if the fistula is of small size, with only a slight faecal discharge, and can be located near or below the ileo-caecal valve, to postpone operative measures for a reasonable time, in the hope that it will gradually contract and eventually close spontaneously. In those more serious cases in which the opening, on account of its size, location, and the fact that it is accompanied by an intestinal flexure or a growth causing obstruction to the passage of the bowel contents, fails to diminish in size after a few weeks, operative measures should unhesitatingly be advised.

On May 16, 1896, the writer received an invitation, extended to him by reason of a vote of the medical board of the Hartford (Connecticut) hospital, as well as a personal request from the visiting surgeon, Dr. H. G. Howe, then doing duty, to visit that institution for the purpose of operating upon two patients, each of whom was suffering from a faecal fistula, with a view to demonstrating the method of intestinal anastomosis by invagination and suture devised by Maunsell, which the writer has advocated for several years past as preferable to and more surgical than that originated by Murphy, of Chicago, in the event of simple suture of the bowel opening not sufficing to remedy the defect. Accordingly, on May 17th, the writer visited the hospital, and, with the kind

and valuable assistance of Dr. Howe and Dr. Ingalls, the operations were performed. For the histories of the two cases, the writer is indebted to the house surgeon, Dr. Naylor.

CASE I.—L. M——, a male, aged twenty-two years, a farmer, was admitted to the Hartford hospital on August 3, 1894. He said that about six weeks previous to admission, he had had an attack of what was diagnosticated as bilious colic, and for nine days nothing had escaped from the bowels. Under medical treatment, the bowels finally moved, greatly to the patient's relief. Four weeks after the seizure, an abscess opened spontaneously in the patient's groin, near the lower end of Poupart's ligament. Four days later, another opening occurred in the right iliac region. Both openings remained patent, and discharged pus and faecal matter freely.

On August 7th, the patient was operated upon. The whole layer of the abdomen above the muscle was covered with pus and faecal matter. On opening the abdomen, an abscess cavity was discovered, in which the appendix was found in a gangrenous condition. This was removed and the abscess cavity drained. Faeces, however, continued to be discharged through the wound.

On August 25th, another attempt was made to close the opening which was found in the gut. The peritoneal surfaces were approximated by means of Lembert's sutures, over which the omentum was grafted.

On September 1st, it was noted that the stitches had not held, and that in consequence the fistula had reopened and was discharging faecal matter.

On November 25th, the patient left the hospital, with the bowel opening still patent.

He was readmitted on May 3, 1896, with the local condition unchanged. He was given light diet, and on May 17th, after the usual preparation, he was anaesthetised, and examination revealed the fact that a faecal fistula of large size existed, the external opening being located at a point in the old cicatrix opposite the anterior superior spine of the ileum, about two and one half inches to its inner side. The peritoneal coat of the intestine surrounding the opening in the gut had united to the parietal peritoneum, and the mucous coat of the intestine had united to the cutaneous tissue and was everted, forming an artificial anus. The parts, including the interior of the bowel adjoining the fistulous opening, were washed with hydrozone. The foam resulting from the decomposition of the liquid and the liberation of the contained oxy-

gen was allowed to remain for some minutes before it was removed; after which an incision about four inches in length was made, having the opening in the gut for its centre. The old scar tissue was excised as far as possible, and the remaining fistulous tract vigorously scraped with a sharp spoon. When the peritoneum was reached, the gut was freed by dissection. The edges of the opening in it were then caught and held by clamps, while the adhesions which bound down the flexed knuckle of gut were dissected away and broken up. The loop of gut containing the opening was then brought outside of the abdominal cavity, which was shut off by means of gauze and sponges. It was found to be located in the lower portion of the ileum. It was laterally situated, involving a large portion of the intestinal calibre, and was so irregular in shape that it was thought wise to excise the damaged and thickened portion of the bowel, which was about four inches in length.

This was accomplished after the application of McLaren's clamps to the gut at some distance from the points of incision, and the anastomosis of the divided ends was effected by means of the technique already alluded to, devised by the late Professor Maunsell, and described by the writer in an article entitled "The Technics of Maunsell's Method of Intestinal Anastomosis," which appeared in the *New York Medical Journal* of December 14, 1895. Before the anastomosed bowel was returned into the peritoneal cavity, the points of suture were well washed with a fifty per cent. solution of hydrozone in sterilised water. Some of the full-strength hydrozone was again poured over the tissues in the former site of the fistulous tract, for the double purpose of arresting the oozing, which was free, from the remaining cicatricial tissue, as well as to render the parts aseptic. After the return of the bowel into the peritoneal cavity and the placing of a single row of silkworm-gut sutures, which included all the layers in the abdominal wall, the cavity was flushed with saline solution, some of which was allowed to remain. The sutures were then tied, thus closing the wound without drainage. The cutaneous surface about the wound was washed with hydrozone and then freely dusted over with acetanilid powder, and the usual dressings applied.

The convalescence was uneventful. The patient's bowels moved four times on the fourth day, and daily thereafter. On the same day his pulse rate and bodily temperature became normal, and have remained so. The wound in the abdominal wall united primarily, except for about one inch of the skin, in the middle. On

the twelfth day following the operation the patient was allowed to leave his bed, and was given ordinary diet. At this time it was noted that the patient slept well; that his pulse was strong; that he was free from pain; and that his general condition was good.

CASE II.—W. R——, a male, aged five years, was admitted into the Hartford hospital during May, 1895, suffering from typhloenteritis. The abdominal cavity was opened and a large abscess was found, the cavity of which was washed out and drained without any attempt being made to find the appendix. Soon after the performance of the operation, faecal matter appeared in the discharge. During the year, several unsuccessful efforts were made at intervals to close the fistula by suture, prior to May 17, 1896, when the following procedure was undertaken for the patient's relief:

The fistulous opening was located about one inch and a half from the anterior superior iliac spine, on a line drawn therefrom to the umbilicus. After the usual preparations, the surrounding skin was washed with hydrozone, and this was also injected into the sinus. An incision was then made on either side of the old cicatrix, and it was removed. The peritoneum was separated from the opening in the gut, the edges of which were held together by clamps. The intestinal opening, which was one inch and a half in diameter, proved to be situated in the caecum near the ileo-caecal valve. The head of the colon and adjoining gut were freed by dissection till that portion containing the opening could be brought outside of the abdomen. The general cavity of the peritoneum having been shut off by gauze, the gut was again washed with a fifty per cent. solution of hydrozone. The edges of the fistulous opening were approximated by a purse-string suture of silk. The peritoneal coat of the gut was then approximated by means of Lembert's sutures, and, finally, after using more of the fifty per cent. solution of hydrozone, a portion of omentum was placed over the gut at this point and caught down on either side by sutures, and the bowel was returned into the peritoneal cavity. The old opening in the abdominal wall was scraped and washed with hydrozone, and the edges of the abdominal wound were united by silkworm-gut sutures, which included all the layers. As there had been such long-continued discharge of faecal matter and pus, it was thought best to leave one of the stitches untied, and, for drainage, a narrow strip of gauze was passed down to the bottom of the cavity.



The convalescence was uneventful, except for the formation of a small abscess at the point where the gauze drain was inserted. This was cleaned out with hydrozone and healed kindly, and on May 30th, the thirteenth day after operation, it was noted that the patient was free from pain; that he had a good pulse and appetite; and that his general condition was all that could be desired.

CASE III.—On May 17, 1896, the writer was invited by Dr. Nathan Mayer and Dr. P. H. Ingalls, of Hartford, to see in consultation C. H—, a male, aged fifty-two years, whose history was as follows:

On March 17, 1896, he had been seized with an attack of what proved to be typhloënteritis, and on March 25th a large abscess was opened and evacuated. After the cavity had been irrigated, it was packed with gauze. No attempt was made to find the appendix. About five weeks after the operation, faecal matter began to escape from the remaining wound and a faecal fistula developed, through which more or less of the contents of the intestinal canal passed. On examination, an artificial anus was found, situated about one inch and a half from the anterior superior iliac spine, on a line from this point to the umbilicus, and about one inch in diameter. The mucous lining of the bowel was adherent to the cutaneous tissue, and was everted and protruded. As it was possible, by the use of pads, largely to control the passage of faecal matter through the opening, and the patient's condition was not considered favourable, immediate operation was not advised; but the opinion was expressed, that on account of the size of the opening and the attachment of the mucous membrane to the cutaneous tissue and its eversion, it was improbable that the opening would close spontaneously. A few weeks later, the patient's general condition having improved, on account of the annoyance caused him by the lack of control over the bowel contents and the irritation of the skin by the passage over it of faecal matter, it was deemed best to attempt the closure of the opening.

On June 17th, assisted by Dr. Ingalls, Dr. Mayer, Dr. Shepard, and Dr. Stearn, of Hartford, and Dr. Parker Syms, of this city, at the patient's home, the following operation was performed: After the preparation of the patient and the administration of the anaesthetic, the skin surrounding the opening was washed with hydrozone, some being also injected into the interior of the bowel. Then a small sponge attached to a piece of silk was passed into the bowel, plugging the opening. An incision was made on either

side of the old cicatrix, having the bowel opening for its centre. Thus the old scar tissue was excised. The parietal peritoneum was next freed from its attachment to the gut, and existing adhesions were broken up and the gut was withdrawn from the peritoneal cavity, which was shut off by gauze. The opening proved to be situated in the side of the caecum, above and about one inch and a half from the point of attachment of the appendix, of which two and one half inches remained. This was removed after the opening in the gut had been closed, first by a purse-string suture, and then by several rows of Lembert's sutures. After this, the bowel surface was washed with a fifty per cent. solution of hydrozone, and, as an additional precaution, the omentum was drawn over and sutured to the bowel. The abdominal walls were approximated by silkworm-gut sutures, which passed through all the abdominal layers; but, as there had been some loss of tissue during the continued suppuration, the fascia was approximated by interrupted sutures of catgut. Drainage was not employed.

Convalescence was uneventful, aside from the formation of a stitch abscess, and the patient has remained in good health up to the present time.

The cause of the fistulous openings in Cases I and II was undoubtedly the failure in the first, and delay in the second, to resort to surgical measures for their relief. In both of these cases, the trouble apparently originated in an attack of typhloënteritis, to which was added, in the first case, probable strangulation of the lower portion of the ileum by a band, and which perforated, after it had become shut off from the general cavity, by adhesive peritonitis. In the second case, the abscess apparently ruptured into the caecum before the external opening was made. In the third case, the cause of the opening was either the pressure on the gut of the material used to drain the abscess cavity, or it was the result of an inflammatory process within the caecum, as the perforation did not manifest itself until five weeks after the opening of the abscess. Another point of interest in Cases I and II, is the fact that several previous unsuccessful efforts to close the openings in the bowel had been made. The reason why these efforts had proved ineffectual, in the writer's opinion, is that the operative measures undertaken for their relief

were not sufficiently radical in character, the efforts being directed to closing the bowel opening only, and no attempt being made to restore the faecal passage by breaking up the existing adhesions, which had caused more or less intestinal angulation, and consequently too much pressure was brought to bear on the sutures, and they quickly cut out, allowing the fistulae to reopen.

The method of closing faecal fistulae without opening the peritoneal cavity and relieving the obstruction from adhesions, seems to be approved by J. Gregg Smith, in a paper which appeared in the *Bristol Medico-Chirurgical Review*, of March, 1895. Undoubtedly it is well, when possible, to close the opening in the bowel before breaking up the peritoneal adhesions, but, as soon as this has been accomplished, an effort should, in all cases in which operation is deemed a necessity, be made to remove the existing obstruction to the faecal current, by destroying the adhesions which hold the bowel in a malposition. In fact, few cases which would not heal spontaneously will be benefited by simple closure of the bowel opening, if the obstruction is allowed to continue.

Ever since September, 1893, when the writer proved the value of hydrogen dioxide as an effective antiseptic, which in proper solution did not unduly irritate the peritoneum, when followed up by a six-tenth per cent. saline solution, he has had little reason to fear the danger of causing septic peritonitis from the accidental escape of pus or faecal matter while operating. He employs all possible measures to prevent the occurrence of this complication, but, when it occurs, it is invariably successfully met by the use of hydrogen dioxide, as heretofore described. In those cases in which the gut around and about the opening is much thickened and friable, by reason of the long-standing inflammatory process, it is the writer's belief that it is best to resect the diseased portion of the bowel, and join the ends of the bowel by the suture method of Maunsell. With a proper understanding on the surgeon's part of the technique, and the objects to be attained by operation,—i. e., the restoration of the integrity of the intes-

tinal canal, as well as the closure of the bowel opening—the operation undertaken for the relief of patients suffering from faecal fistula should be devoid of unusual danger, and failure to succeed in rescuing these patients from their unfortunate and distressing plight should prove the exception, rather than, as at present, the rule.

### DISCUSSION.

DR. MARCY said that he desired to heartily approve of this paper. In a number of similar cases, he had felt that it was much wiser to leave the original opening entirely alone, making the incision in the median line sufficiently free, and then dissecting off the adhesions of the intestine to the abdominal wound. This seemed to him a safer method. The peritoneal opening of the fistula having been closed off, there was only left an external wound, which could be readily treated by dissection. He had operated upon a number of cases in this way, with great ease and satisfaction. Regarding the method of closing the wound in the intestine, he said that he had found it very easy to close it with a double tendon suture, and then reflecting over it the peritoneum by what he called, “the continuous parallel suture.” This left no possibility of the occurrence of intestinal adhesions, and was very much simpler than the ordinary method of suturing.

DR. WIGGIN said that in the cases which were not resected, he had used the purse-string suture, and then had done what Dr. Marcy had said. In both cases, he had grafted the omentum over it for safety, using silk.

DR. JOSEPH D. BRYANT said that he had had an opportunity, on five occasions, to close an intestinal fistula, following the establishment of an artificial anus, or as a sequel of appendicitis. He spoke of it with a view to explaining the technique. This had been in all cases the securing of thorough cleansing of all the surfaces, both external and internal; next, the drawing together tightly of the parts by sutures, and sometimes by the interposition of iodoform gauze. These sutures were left long, and were raised up during the operation, so as to bring the field of operation distinctly into view. This was then circumscribed by a scalpel, cutting down upon the wall of the gut, and sewing it first with a Lembert suture, and subsequently with a repetition of this



suture, or with a continuous suture. Of the five cases, all succeeded but one. In this one—a sequel of an appendicitis—he had tried this method twice, and had failed in both instances. Examination of the tissues by Dr. Dunham had then showed that the tissues were alive with the tubercle bacilli.

## HINDRANCES TO THE SUCCESSFUL TREATMENT OF THE DISEASES OF INFANCY AND CHILDHOOD.

By J. LEWIS SMITH, M. D., of New York County.

*October 13, 1896.*

The importance of the care and treatment of sick children is apparent when we examine any table of vital statistics and observe the large proportion that have died under the age of five years. Evidently in infancy and early childhood the liability to disease is great and the tenure of life feeble. It is the duty of the physician to endeavour to diminish this mortality and minimise the various forms of disease which produce it. In order to accomplish this purpose, the causes of the sickness of young children should be clearly understood by physicians and the laity, so that preventive as well as curative measures may be more effectually applied.

We will point out some of the obstacles which physicians encounter in their endeavour to promote the health and save the lives of young children. It is an established axiom that mothers in good health, having a plentiful secretion of milk, and no hindrance to lactation which cannot be overcome, should suckle their infants during the first twelve months. But many New York women, educated, refined, and in good pecuniary circumstances, will not do this. Society, with its varied entertainments, has stronger attachments for them than maternal duties. Consequently wet-nurses are employed, many of whom have serious faults, as insufficient milk or milk of poor quality, impaired constitutions, or latent disease. Change of wet-nurse, or premature weaning, is the common result. Infants thus treated are not robust, and become an easier prey to disease than those nourished at the mother's

breast. Moreover, this unnecessary employment of wet-nurses in the wealthier classes renders good wet-nurses scarce and with difficulty obtained by those mothers who are devoted and affectionate, but who from ill health, poverty, or hard work, cannot suckle their infants.

But there is a worse form of this neglect of maternal duties. In the cities, as New York and those of smaller size but similar conditions, with crowded tenement-houses, occupied largely by the most degraded class of immigrants, but little removed from the brute creation, ignorant, destitute, vicious, intemperate, and indolent, the number of infants that perish from neglect, ill usage, or abandonment cannot be estimated, but is appalling.

Several years ago, before that most beneficent institution, the New York Foundling Asylum, was in existence, the commissioners of charities and correction appointed me physician to the foundlings of New York. These waifs were intrusted to the pauper women in the almshouse. Each woman occupied a cot, under which were the dirty clothes and broken utensils brought from her shanty or tenement-house in the city. Foundlings were transported every day to the almshouse, and distributed by the superintendent, who informed me at my first visit that it would be an act of humanity if each foundling were given a fatal dose of opium on its arrival, since all of them died. Only one was pointed out that had lived beyond the third or fourth month. The foul air of the almshouse and mode of feeding these abandoned infants caused vomiting, gastro-intestinal catarrh, and fatal marasmus. The abandonment of infants by degraded mothers still continues, notwithstanding the educational and religious influence which tends to elevate this class of parents. The approaches to the New York Foundling Asylum are constantly guarded, to prevent mothers from depositing their infants at its doors and hastening away to avoid discovery. Occasionally, even with these precautions, the wail of the abandoned infant is heard outside the door. Obviously, the physician, however great his endeavour and

skill, cannot prevent a large death-rate of infants who are abandoned in this manner. The mother's care, affection, and milk are essential for the health and normal development in the first year of life.

The remark has been made by some observer that debauchery, drunkenness, and vice degrade men to a position below the brutes. The facts which we have related show that this is true as regards parental affection. The physician's task in treating infantile diseases would be much easier and more effective if this trait were as strong and constant as it is in animals.

But there have been and are still causes of a different nature which embarrass and hinder the medical treatment of young children. First, we will call attention to the long delay in the medical colleges in giving adequate instruction in pediatrics, so that those who graduated in medicine, until recently, commenced practice with little knowledge of those diseases of early life which they were called upon to treat. Prior to the instruction given in pediatric clinics, which have been in recent times introduced in the college curriculum, the annual catalogues announced a professorship in obstetrics and diseases of women and children, but the last part of the announcement received little or no attention from the professor. As might be expected from this neglect of pediatrics, errors of doctrine or belief occurred in the aetiology and pathology of the diseases of infancy and childhood, and consequently incorrect treatment, dietetic and medicinal, resulted. I could relate striking examples of this, which might have been prevented if the colleges had given adequate instruction in regard to the hygienic and especially the dietetic management of young children.

Another important obstacle to the proper treatment of infants in sickness has been the theory regarding the pathogenic effects of dentition. Our ancestors in the profession, having had scanty pediatric knowledge, when summoned to the nursery and requested to give a diagnosis, found it convenient to say, whatever the age of the patient under three



years: "It suffers from painful or retarded dentition." This authoritative declaration aided in establishing the reputation of the doctor for quick and accurate diagnosis; the gum lancet, as useful to him as the cane is to the cripple, was used, and if the patient died from some unknown malady which was running its course unchecked, teething was the assigned cause. This diagnosis satisfied the friends; hence the period of first dentition was regarded as one of great peril by our ancestors. I can recall to mind, among my earlier observations of New York practice, cases accompanied by fever and fretfulness, as scarlet fever, poliomyelitis, entero-colitis, chronic indigestion or marasmus, naso-pharyngeal catarrh, the tardy dentition of rachitis, or the swollen gums of scurvy, which were thought to be effects of dentition. If the true disease were finally apparent, its discovery did not diminish the importance of teething in the estimation of the physician or family.

It is not to be denied that in rare instances an abscess forms in the gum, over a tooth, which has not protruded, and that it is, perhaps, possible for an advancing tooth to exert undue pressure upon a nervous filament, causing tenderness and, maybe, certain reflex symptoms. As to the former, of course an incision could be proper. As to the latter, if it does occur, the fever, fretfulness, eclampsia, etc., which might be referred to this cause, usually disappear by the use of one of the bromides and attention to the digestive function.

But the widespread belief among the laity of the pathogenic effect of dentition in the infant, requires more than a passing notice. It has done incalculable harm by influencing the care and treatment of infants. During the twenty years of my attendance in the Bureau for the Outdoor Poor, at Bellevue, mothers have often brought emaciated and very sick babies to the clinics, with the request that something be done to aid the teething. They had made the diagnosis, and only wished that some therapeutic means be employed to relieve the painful dentition. They had waited patiently

for the appearance of the teeth, daily rubbing the gums until they were sore, but the little patients were gradually becoming weaker and more emaciated, and were often dangerously, if not fatally, sick when the call was made. Not long ago a wasted infant with entero-colitis, having the diarrhoea and vomiting so common in the summer season, and being in a very critical condition, was brought to me, with the information from the mother that everything previously done to relieve the teething had failed, and she had called, in order to ascertain if there might be some more effectual remedy that would expedite the teething process.

The pernicious theory that dental evolution is a common cause of infantile diseases will probably at no distant day cease to influence the practice of intelligent physicians, who will take time to examine sufficiently for a correct diagnosis; but established firmly in the popular mind as it is, it will continue for an indefinite time to produce its evil consequences in the opinion and practice of parents.

Another absurd doctrine, which in numerous instances in childhood has led to permanent disease of that important central organ, the heart, and to premature death, is that the so-called "growing pains" are a symptom of development and, being normal in cases of rapid growth, need no treatment, and are not benefited by it. Consequently, the physician is not consulted, or is summoned at a late period, when he finds the heart permanently damaged by rheumatism, which he might have prevented by an early treatment. There is no reason to believe that the physiological process of growth is painful; certainly the pains which the laity believe to be symptomatic of a rapid growth have a rheumatic origin, and are relieved by the salicylate treatment of rheumatism. Rheumatism in children is usually much milder than in the adult. Not infrequently, those affected with it are able to walk with little inconvenience through the whole sickness, and the joints are not only less painful but less swollen than in adults. Unfortunately, the tendency is strong for rheumatic inflammation to shift from

joint to joint, and it is as likely to attack the heart, causing an endocarditis or myocarditis, as it is to attack a new point. Indeed, it is my opinion that in rare instances the first manifestation of acute rheumatism is in the heart, the joints becoming affected afterwards.

Acute rheumatism, if properly treated in the beginning, can be promptly cured, and it is a great misfortune to the child that this malady is so generally neglected in its commencement; for, as a rule, its first manifestations are in the extremities, and are readily recognised. Rheumatism affords a notable instance of the need of educating the masses in the rudiments of physiology and pathology. If the error contained in the expression "growing pains" could be forever abolished, cases of incurable heart disease commencing in early life would be much less frequent. In no other disease is early treatment more urgently required than in rheumatism, since by it the life-long cardiac sequel, the perpetual anxiety of friends, and the consciousness of the physician that he is summoned too late, when his remedies are only palliative, might be avoided.

It has been my purpose in this paper to point out those causes of diseases in infancy and childhood which seem to me important, but have attracted too little notice. The sources of insalubrity, the spread of infectious maladies through the schools and other places of resort, the proper mode of alimentation at different ages, these and kindred subjects have been fully set forth in recent pediatric literature, but the facts presented in the above paper (which have an important bearing on the diseases and mortality of early life) should, in my opinion, receive more attention.

## THE PRACTICAL USES OF ROENTGEN'S DISCOVERY AS APPLIED TO SURGERY.

By REGINALD H. SAYRE, M. D., of New York County.

*October 13, 1896.*

It is not my intention in this paper to enter elaborately into a discussion of the phenomena which were first described by Professor Roentgen, of Würzburg, in the beginning of this year, but to deal more especially with their practical application in the field of surgery. It may not, however, be out of place to review, in a very cursory manner, the outlines of the physical phenomena which led to this discovery.

From the time of Faraday, it had been noted that there were differences in an electrical discharge passing from one pole of a battery to the other in the ordinary atmosphere, in different gases and in a vacuum. When this electrical discharge takes place in the inside of a glass tube exhausted to a more or less perfect vacuum, a series of various colours is produced, which vary according to the residual gases remaining in the tube and the glass of which the tube is constructed, and the very beautiful phenomena are produced which we have all seen in the experiments with Geisler's tubes; which, as you know, are tubes of thin glass having platinum wires soldered into the ends, to serve as electrodes, the tubes being then exhausted and hermetically sealed. When the current passes from one pole to another in the open air, sparking takes place, but in a vacuum, instead of sparking, luminous effects are produced, and rays pass from the anode, or positive pole, and from the cathode, or negative pole. The electrical discharge may be had either by means of a Holtz machine, or from a Ruhmkorff coil, the primary current in the latter case being obtained either from a battery or from a dynamo, as may be most convenient. The rays which pass



from the cathode, or negative pole, were carefully studied by Professor Crookes, who, instead of the ordinary Geisler tube, employed one in which he obtained a very much nearer approach to a perfect vacuum. The tubes, which are called after his name, or after Hittorf by the Germans, and which are employed for the production of the X-rays, are exhausted to about one millionth of an atmosphere. If the exhaustion is carried to a sufficiently high point, no passage of electricity takes place.

Crookes made a large series of very important investigations concerning these cathode rays, or the rays which came from the negative pole, and studied their effects inside the discharge tube with very great exactness, noting that they could be reflected and refracted, and also deflected from their path by means of a magnet. It was noted that they caused fluorescence inside of the tube.

Lenard, in following out a train of investigation in regard to cathode rays, found that if an aluminum window were made in the tube by means of soldering a small plate of aluminum over a hole in the tube and subsequently exhausting the latter, the cathode rays could be made to pass outside the tube, through this window, and cause fluorescence in various substances, at a distance of five centimeters, beyond the tube.

Professor Roentgen, in continuing these investigations, found that it was possible, under more delicately-adjusted conditions, to produce fluorescence at a much greater distance beyond the tube, and also that the aluminum window was not necessary, as the rays were capable of penetrating the glass. In his experiments, he noted that the fluorescent substance was caused to glow when turned away from the tube, as well as when the side of the plate which was painted with it was toward the tube. Not only was this fluorescence produced when the rays passed through the back of the plate, but the latter even glowed when a thick book was interposed between it and the tube. A pine board, even, did not prevent the occurrence of fluorescence, showing that

these rays passed through many objects which heretofore had been considered opaque.

In the 'course of his experiments, Roentgen's hand was interposed between the tube and the plate, but the shadow which was cast on the latter was not of the hand, but of its bones. Investigation showed that this latter effect was due to the fact that the rays penetrated all the tissues of the hand, but that the denser parts were more resistant, and, in consequence, cast a shadow.

It was also found that these rays differed in certain important characteristics from the ordinary cathode rays, the most remarkable difference being that the X-rays could not be deflected by a magnet, whereas the cathode rays could be so deflected.

As these rays were thus proven not to be the ordinary cathode rays which had been known for many years, and as very little was known about them, Roentgen called them *X-rays*, as a convenient means of describing them; in the same way that mathematicians employ the last letters of the alphabet for denoting unknown quantities.

That these X-rays were capable of penetrating all objects, seemed to be simply a question of the length of time the object was exposed to their influence, the density of the substance being the chief factor in preventing the passage of the rays, so that they passed very rapidly through aluminum, but with great difficulty through platinum. Glass also was found to be very opaque.

It was also discovered that these rays had the property of affecting the ordinary sensitised plate used in photography, and thus the shadows made by them in their passage through various substances, could be recorded and preserved. If the hand, for instance, be interposed between a photographic plate and a discharge tube, which is connected with an electrical machine in operation and giving forth X-rays, the latter will pass through all tissues of the hand; but the bones being much more dense than the soft parts, a shadow is cast by the bones, somewhat as it is when the hand is held

in front of a candle and the shadow is cast on a sheet. If a very short exposure be made, a shadow will be cast on the photographic plate of the entire hand, the soft parts making a very much lighter shadow than that caused by the bones. If the exposure be prolonged a greater length of time, the shadow caused by the soft parts will disappear, because the rays will have penetrated them sufficiently to affect the sensitised surface of the photographic plate in this shaded portion, as well as in the part uncovered by the hand, and the bones alone will show. If the exposure be still farther prolonged, the bones themselves will fade away until, by very prolonged exposure, it is possible to cause them to disappear altogether.

The fact that these rays were capable of affecting the ordinary photographic plate, has led to most sudden and widespread interest in this extraordinary phenomenon, and much work has been done in turning these scientific truths to practical account. One of the first things that was done, simultaneously, by a number of observers in different parts of the world, was to manufacture apparatus by which the effect of these rays could be seen by the naked eye, in the shape of an opaque box fitting closely to the face, having the surface opposite the eyes coated with a fluorescent substance, so that when this surface was turned toward the source of the X-rays, it became luminous, and the shadows of the hand, or any other substance, could be readily observed. Barium platino-cyanide, which Roentgen employed, being very expensive, various other substances were investigated, Mr. Edison having been especially active in this direction, and tungstate of calcium has been found extremely well adapted for the purpose, becoming very luminous, and being comparatively cheap.

It was evident from the first, that this new discovery opened a wide field in surgical diagnosis, and it has seemed to me that it might be of interest to you, this evening, to dwell upon some of the points wherein I have found it of use. You all have heard of the numerous instances in which

needles have been located, which were otherwise inaccessible, and have heard of the case where an enormous number of bird-shot were located in the hand,—some in the bones, some in the soft parts—and successfully removed. Another extremely curious fact is, that glass is much more opaque to the rays than are many metals, and, in consequence, that pieces of glass, which are often very hard to find when imbedded in human tissues, can be located with ease by this method.

The most obvious use to which this new discovery can be placed, is in the location of uncertain fractures, and in the differential diagnosis between fracture and dislocation in the neighbourhood of a joint. After the fracture has been set and the dislocation reduced, it is possible, by means of the X-ray, to determine whether the dislocation has been satisfactorily reduced, and if the broken fragments are in correct apposition; all this being accomplished while the injured member is in its plaster of Paris dressing, so that, instead of waiting a number of weeks and removing the dressing to find that the fragments are incorrectly placed, this fact can be at once ascertained, and the mistake remedied.

In operations on congenital dislocation of the hip, it is feasible, first of all, to take a skiagraph, or shadow picture, of the pelvis, showing the acetabulum and the displacement of the femur, and, later on, to take a similar picture, showing the femur replaced in the acetabulum.

In cases of old sequestra in the neighbourhood of a joint, it is possible to locate these sequestra, and I believe that it is possible to locate, in this manner, abscesses occurring in bone, although I have not had a case on which this experiment could be tried.

The localisation of foci of disease in the neighbourhood of tubercular joints, before the joint itself has become involved, is a matter of much importance, and may at times point out to the surgeon the mode by which such a focus may be successfully removed before the disease has invaded the joint.

Another point upon which it has bearing, is the differential



diagnosis between fibrous and bony ankylosis. You will notice, from the pictures which I shall exhibit this evening, that in the normal joint there apparently is a distinct interval between the ends of the bones composing a joint, which is due to the fact that the cartilage covering the ends of the bones is so very much more translucent than the bone itself, that it does not cast a shadow, whereas, in a joint where the cartilage has been absorbed and the bony surfaces themselves brought in contact, this apparent gap does not exist. In studying these pictures, more can usually be seen on the negative than in the print, although this is not invariably the case, and a certain amount of practice is necessary in order to permit one to correctly interpret what he sees.

I remember being greatly deceived in the first picture which I saw of a child's ankle. I had not seen the child, but was told that it had been the subject of a railroad accident, and I at once imagined that the fissures which I saw in the patient, in the neighbourhood of the ankle-joint, were fractures or epiphysial separations. But, on examining the picture of the other leg, I found exactly the same gaps in the bone, and at once saw that what I had taken for fractures were simply the epiphysial cartilages, which had not yet become ossified, on account of the youth of the subject, and, in consequence, failed to cast a shadow.

In children, this same phenomenon is noticed in the acetabulum and about all joints, the epiphysis appearing as a small button of bone, quite distinct from the shaft, and not touching the button of bone which forms the epiphysis composing the other side of the joint. If the exposure be of a certain length, the outline of the entire end of the bone can be made out, the shadow being much less dense than that of its ossific centre. This same fact makes the skiagraphs of club-feet of very little importance in children, because the bones are so largely cartilaginous that their relations to one another are rendered very indistinct, and only the central parts can be discerned, large gaps apparently existing between all the bones of the foot.

It affords us, however, a very striking proof of a fact which we all of us must realise, as soon as our attention is called to it, that the feet of children are extremely cartilaginous, and that the bones are susceptible, in consequence, of very great alterations in shape, provided they are properly manipulated; and a practical deduction which may be drawn from this is the folly of removing such cartilaginous bones in young children, instead of submitting them to properly-directed force, in order that their shape may be so modified as to correct existing deformities. In cases of web-fingers and supernumerary toes, great use has been made of this discovery in planning the operation, as the outward appearance of the hand does not always give a correct idea of the internal relations of the bones.<sup>1</sup>

It seems to me it may be possible, with a better practical understanding of the application of the principles involved in making these pictures, that good skiagraphs may be obtained of tumors, and much light thrown upon abnormal conditions within the thorax and pelvis. I have, as yet, seen no good pictures which confirm this view, but the more I have seen of the practical workings of X-ray photography, the more I have realised the very delicate adjustment which is necessary to attain certain results.

It must not be supposed that all that is necessary to obtain practical results, is the purchase of an induction coil, a battery, and a few Crookes tubes. Practical experience is needed to show the amount of current to be used, the proper length of spark, the amount of exposure; and a great many tiresome failures will be necessary before good work can be achieved. The exposure which gives the best definition for bones, is altogether too long to give definition for soft parts, and the operator must know in advance what he is trying to show, in order to be able to regulate with exactness the conditions to produce a proper result.

Again: It is necessary to familiarise yourself very thoroughly with the photograph under consideration, and each

<sup>1</sup> *Vide* case reported by Dr. C. N. Dowd.

time that you study it, new features will impress themselves upon your mind. It often happens that when you return to an old photograph, after an interval of a few days, you will discover various points of interest in it which you failed to detect at the time of your previous examination. The shadows which are cast by various parts of the body are not very well known to us. It is a matter which has been investigated, but very superficially, and it will require a large number of observations before we are enabled to put the proper interpretation upon the pictures that we see. We have to bear in mind that the nearer the plate is to the object which casts its shadow upon it, the more clearly defined will be the outline; and, in many instances, some parts of the body which are photographed, are much more dense than others, and the amount of exposure which is necessary to give the best results, in certain places, will be too long, or too short, to give the best results in others; and, in consequence, if we wish to examine the entire length of a bone, or the entire length of the spinal column, for instance, it may be necessary to take a series of plates, with different exposures, and to combine all of these in our search for information.

I wish to express my thanks to Mr. Franklin Martin, of No. 110 E. 26th street, for the great assistance he has been to me in following out this line of study, and the great care which he has shown in making skiagraphs of cases under various trying circumstances.

The following skiagraphs were taken with the tube distant about eighteen inches from the patient, as a rule. In some instances, the patient lay on the plate, which was covered only by the paper envelope, to preserve it from fogging by daylight. In other cases, a piece of paper, termed the screen, covered with tungstate of calcium, was placed next to the film, and in one instance, the screen was placed on the unsensitised surface of the plate. The object of using the screen, is to shorten the time of exposure, but I do not think that the pictures so taken are as clear in outline as those taken without the screen.

## THE TREATMENT OF OTORRHOEA AND ITS IMPORTANCE.

By EDWARD B. DENCH, M. D., of New York County.

*October 13, 1896.*

To begin a paper by an apology for its title is certainly not reassuring. I feel, however, obliged to preface my remarks by explaining the reasons for the use of the term, "otorrhoea."

An aural discharge may be the result of so many pathological conditions, that the attempt to consider the treatment of the symptom alone, seems at first absurd. I beg of you to remember, however, that these remarks are not intended for the expert otologist, but particularly for men who are engaged in general practice. To such of our profession, diseases of the ear must, of necessity, form but a small portion of their work, and they have neither the time nor the opportunity to give these cases special attention.

A patient presents himself, complaining of aural discharge. What should this mean to the general practitioner? How shall he deal with it? Of how much importance is it to be considered? Many valuable facts can be elicited by a few questions, and the information thus obtained will enable a physician to treat the case properly, or, at least, prevent him from treating it improperly, even without making a speculum examination.

The principal questions to be asked are as follows:

How long has the discharge continued?

Has it been preceded or accompanied by pain?

Has there ever been a discharge from the ear before the present attack?

Has the discharge been continuous or intermittent?



Has the discharge suddenly diminished in quantity, and has this symptom been followed by pain?

In conjunction with these questions, the surgeon should also observe the character of the discharge, that is, whether it is thin and serous or thicker and sero-mucous, or whether it is purulent. He should also determine whether it is profuse or scanty, as will be easily ascertained after inquiring when the ear was last cleansed, and then observing the amount of fluid present in the canal at the time of examination. These questions may at first seem of no value, but when answered with intelligence, are of no small importance as an aid, both to diagnosis and prognosis.

We will now consider them more in detail.

The duration of the symptom is the first fact to be elicited. If there has been a constant, profuse discharge from the ear for more than two months, it may at once be decided that the middle ear is the part affected, and that the drum membrane is not intact. From the anatomical structure of the auditory canal, it is impossible for a lesion confined to this region to be the cause of a profuse chronic discharge. On the other hand, if the discharge is recent, it may be due to a lesion either of the canal or of the middle ear. If thin, serous, and scanty, the most probable site of the lesion is the external auditory meatus. If sero-mucous in character, it always comes from the middle ear, and usually has been preceded by severe pain. A recent purulent discharge may be the result of inflammation either of the external auditory canal or of the middle ear, and is always associated with pain in the ear.

In adults, considerable information can be obtained by palpation. If pressure in front of the tragus, or traction upon the auricle, is painful, then the cartilaginous canal is the part involved. In infants, however, the manipulation of these parts will cause pain, even if the pathological process is within the middle ear. If there is a history of recurrent attacks of otorrhoea, alternating with intervals during which the ear is free from discharge, it is probable that the symptoms depend upon some middle-ear affection. In these

cases, the discharge may be either sero-mucous or purulent, and is frequently preceded by severe pain. The aural phenomena almost invariably follow a severe cold in the head.

Let us now consider briefly the conditions that may give rise to these various forms of otorrhoea.

In the external meatus, the presence of one of the varieties of aspergillus is often the cause of a slight, watery discharge from the ear. This discharge may cause excoriation of the walls of the canal, or even of the auricle, by maceration of the horny layer of the skin. When not very profuse, the fluid dries about the orifice of the meatus, forming crusts or scales. When these are removed, the underlying integument is found denuded of its superficial epithelium. It need hardly be said, that such a condition renders the integument of the meatus much more liable to infection than when it is protected by its proper epithelium.

The dangers of infection are greatly enhanced by the efforts of the patient to relieve the intense pruritus which results from such a parasitic inflammation. Thus, the finger is often introduced into the ear to relieve the itching, or the patient may introduce the tip of a penholder, an ear spoon, a hair-pin, or some other device, in order to relieve the discomfort. In this way, localised infection is often produced, and the frequency of furuncles of the external auditory canal, in these cases, is easily explained.

If such a localised infection of the canal occurs, then the patient complains of severe pain in the ear, pressure in front of the tragus causes pain, and in a few days a discharge, which was previously serous, becomes purulent. When first seen, such a case might be mistaken for one of purulent otitis media. The discharge from a furuncle, however, cannot continue for more than a few days, even if the canal is infected in several places successively, or, in other words, if there should be a "crop" of furuncles, which is commonly the case. In such an event, the purulent discharge from the ear would not be continuous, but would be intermittent, and would follow the rupture of each abscess.

Again: The age of the patient is of diagnostic value. The external meatus is very rarely the seat of a primary infection in infancy. In adult life, however, a circumscribed external otitis is of common occurrence.

Continuing the consideration of a serous aural discharge, we come naturally to possible middle-ear conditions giving rise to this symptom. Strictly speaking, the discharge from the middle ear is almost never serous, but rather, sero-mucous; that is, instead of being thin, transparent, and watery, it is thick, opalescent, and tenacious. In such cases, there is most frequently a history of recurrent attacks following exposure to cold. Such a history should lead the surgeon to suspect one of two conditions: In the first place, the patient may be suffering from an acute inflammation of the lower part of the tympanic cavity, followed by an effusion sufficient to rupture the drum membrane. In such cases, the discharge will be preceded by pain. In an infant, the amount of discharge may have been very small, and the pain may have continued but a few hours; in fact, the child may have simply been restless at night.

In adult patients, an otorrhoea from such a cause will not cease quickly, and the subjective symptoms will be more pronounced. Although the pain may not be severe, the patient will complain of a feeling of fulness in the ear, impairment of hearing, and tinnitus. In these cases, the perforation of the membrana tympani is small, and closes spontaneously as soon as it has allowed enough of the effusion to escape to relieve the distention of the tympanum.

The second condition, which may produce almost similar phenomena, is one in which the membrana tympani is the seat of a large perforation, the result of a previous severe purulent inflammation. Such a condition is frequently present in adult life; the purulent inflammation may have occurred in infancy, and hence without the cognisance of the patient. As these destructive inflammations ordinarily complicate one of the exanthemata, inquiries about the occurrence of such a disease in early life are of value. When

a large portion of the membrana tympani has been destroyed, recurrent attacks of serous otorrhoea are seldom attended with pain, as the fluid can escape the tympanum without difficulty.

It is obvious that the local condition just considered is almost invariably met with, either in older children or in adults, and is seldom seen in infants.

As stated before, a recent purulent otorrhoea may come from infection of the tissues of the meatus; it may depend, also, upon severe infection of the structures in the upper portion of the tympanum. In this latter event, it usually occurs either as a complicating lesion of some acute infectious disease, or as the result of the introduction of some septic substance into the tympanum through the Eustachian tube, as of water in bathing, or of the solution used in the nasal douche, so frequently advised by the medical attendant. Severe pain and considerable elevation of temperature are almost invariably present in these cases, and serve to locate the inflammation in the middle ear.

As before stated, a chronic purulent discharge can result only from a middle-ear lesion, and such discharge may either have been purulent from the onset, or may have been caused by the infection of a previous serous discharge following middle-ear inflammation. This fact is of great importance, as will be seen when the treatment of otorrhoea is discussed.

It will be found that most cases coming under the observation of the surgeon for treatment of aural discharge, are suffering from middle-ear suppuration, or from the results of such a process which, having continued for a number of years, may have ceased to be active, reappearing only as the result of some exciting cause.

I will not burden you by a recital of the various changes which may result from tympanic suppuration. Suffice it to say, that suppuration always implies the destruction of tissue. In the middle ear, both the soft tissues and osseous structures may be disintegrated, and hence caries of the ossicles and of the bony walls of the middle ear not infrequently occurs.



In those cases where drainage into the meatus is free, the discharge may cease spontaneously, as soon as the necrotic tissues have been evacuated. Often, however, drainage is imperfect, and then symptoms appear which depend either upon pus retention, or upon the evacuation of the septic fluid in some other direction, as into the cranial cavity, or of its absorption into the circulation through one of the larger blood channels.

Most of my readers are, no doubt, convinced by this time that the statement made at the beginning of this paper, that all technicalities would be avoided, was simply a delusion. I beg you, however, to reserve your judgment, as I believe we can still bring order out of this chaos.

You will remember that we have spoken of two sorts of otorrhoea, purulent and non-purulent, the non-purulent being either serous or sero-mucous. The first object of treatment should be to prevent an accumulation of discharge in the canal. The second object should be to secure an aseptic condition of this channel.

While much has been written in favour of the drainage of the meatus by strips of either iodoform or of some other antiseptic gauze inserted into the canal as far as the membrana tympani, my opinion is that this procedure is not applicable in the majority of cases, and my own experience has proven it to be so unsatisfactory that I no longer employ it. If these strips of gauze could be frequently changed, the measure would, no doubt, effect its purpose, but this is obviously impossible, either in private or hospital practice. I therefore prefer the old method of removing the discharge from the canal by the frequent use of the syringe, the irrigation being repeated as often as is necessary to keep the canal free of discharge.

Although it seems a very simple matter to syringe an ear, the operation is seldom done properly by the layman, and is not always successfully performed even by the physician. The fountain syringe is not adapted to the purpose, and either the ordinary piston syringe or soft rubber bulb syringe

should be used. As the removal of the accumulation in the canal is a purely mechanical procedure, a certain amount of force must be used in injecting the irrigating fluid into the meatus. As this passage is formed by two tubes, joining at an angle in both the horizontal and vertical planes, the deeper portion of the canal cannot be cleansed by a column of fluid unless these angles are obliterated, and the axes of the two portions are brought into the same straight line. This is effected by drawing the auricle upward, backward, and outward, during the operation. By this manipulation, the fibrous meatus is made to conform to the direction of the bony canal.

It is also important to remember that the tip of the syringe must be introduced into the meatus, instead of being held close to its mouth. Care should be taken that the force applied in expelling the fluid from the syringe does not crowd the tip of the instrument against the walls of the meatus. The portion of the syringe introduced into the canal should be absolutely immovable, as otherwise, the parts may suffer from traumatism.

It is also to be borne in mind that in infants the bony meatus is absent, and that the inferior wall of the canal lies in contact with the superior wall. In order to convert this passage into a fibrous tube, the walls must be separated by traction upon the auricle, downward, backward, and outward, instead of upward, backward, and outward, as in the adult.

The quantity of fluid to be used at each irrigation varies somewhat, according to the character of the discharge. Usually, half a pint is sufficient for the purpose of cleansing the meatus.

We are next to consider measures to secure asepsis. Given, a serous or muco-serous discharge from the meatus, no matter what its source may be, no further treatment is necessary to obtain a perfect cure than to prevent infection of this fluid as it lies in the external auditory canal. Frequent cleansing diminishes the chances of infection, but the danger is still further reduced if the cleansing fluid is antiseptic in character.

I need hardly say that the syringe must be surgically

clean, and that a separate receptacle should be used for receiving the washings, instead of allowing the return current to flow into the vessel containing the irrigating fluid. This absurd error often occurs unless it is guarded against by giving special directions.

The fluid to be used is largely a matter of choice. Personally, I prefer an aqueous solution of bichloride of mercury, 1-3,000 or 1-5,000. The fluid should be warm, but not hot, and the comfort of the patient best indicates the correct temperature. Many other antiseptic solutions are, no doubt, as good as the one mentioned. I object, however, to the use of peroxide of hydrogen in these cases, although it is highly recommended by many authorities. The mixing of a solution of peroxide of hydrogen with a purulent secretion is followed by the evolution of considerable gas. The mere ocular demonstration of the activity of this agent, on account of the bubbles of gas which are seen to rise to the surface of the fluid as soon as the injection is made, in no way enhances its germicidal properties. The sudden liberation of a large volume of gas in the middle ear, where drainage is imperfect, is not free from danger, and, for this reason, I consider the agent contraindicated in these cases. Another objection is that the continued use of the agent often causes irritation of the canal.

After cleansing the canal in the manner described, it should be maintained in as aseptic a condition as possible until the next irrigation. For this purpose, each irrigation is followed by the instillation of a few drops of a dilute alcoholic solution of the bichloride of mercury, of a strength of 1-3,000, the following mixture being the one I usually employ:

Bichloride of mercury.....	1	part.
Water.....	1,000	"
Alcohol.....	2,000	"

Under the use of these measures, a serous or sero-mucous discharge will ordinarily cease, whether it be the result of an aspergillus of the canal or of an acute catarrhal otitis

media, either with an intact membrana tympani, or in a case in which this structure has been partially destroyed by a previous purulent inflammation. In other words, prevent infection from without, and recovery is prompt.

If the medical attendant is familiar with the use of the head mirror, it is, of course, wise to dry the ear carefully, at least once daily by means of cotton pledgets, and to apply the alcoholic solution above mentioned, to the wall of the canal and to the membrana tympani by means of the cotton-tipped applicator. If the membrana tympani is largely destroyed, this same application should be made to the internal tympanic wall. It is hardly necessary to say that in making such applications, the surgeon's fingers should be carefully cleansed, and that all instruments introduced into the meatus must be in an aseptic condition. It should also be remembered that under no circumstances is the canal to be occluded with cotton. The pledget soon becomes saturated with the discharge, and infection of the contiguous walls of the canal easily occurs.

Powders should not be introduced into the canal to check an otorrhoea. When mixed with the secretion, they form hard masses, which may occlude the channel and prevent free drainage.

These same measures should be applied in cases of purulent otorrhoea, and will prove efficient in the case of furuncles within the meatus, preventing repeated infection of the adjacent parts of the canal.

In acute purulent otitis media, the treatment suggested is the most advantageous, unless the surgeon can determine the exact local condition by speculum examination. The drainage in these cases is often imperfect, and free incision is necessary in order to secure relief. Until this can be done, however, the systematic irrigation of the canal and measures for maintaining an aseptic condition of the region are of the greatest value.

In chronic purulent otitis media, these same measures should also be employed. In these cases, however, drainage



is often imperfect, either from the retention of secretion in the middle ear by the remnants of the membrana tympani, or by the various reduplications of the mucous membrane lining the tympanic cavity. Here, also, free incision is necessary to secure a perfect drainage.

Again, the products of suppuration may be confined by the development of granulation tissue within the middle ear. In order to perfectly drain the cavity, this tissue must be removed either by means of the sharp curette or by the cold wire snare. If the inflammatory process has exhausted itself, free drainage and asepsis will effect a cure. If, however, the process is still active, or if all necrotic tissue has not been evacuated, the discharge may continue, and the suggestions regarding treatment given above will merely reduce it in quantity, but will not cause it to cease completely. I refer particularly to those cases in which the bony structures within the tympanum have become carious. This process may involve the ossicular chain alone, or may extend to the bony walls of the tympanum as well.

It is to be remembered that there is no such thing as "special surgery." The same broad principles which apply to caries and necrosis in other parts of the body, are equally applicable to similar conditions within the middle ear. Every vestige of diseased bone must be removed before relief can be obtained. The exact procedure to be adopted must vary with the local conditions presented by individual cases. Where the caries is limited to the ossicles, and to those portions of the tympanum which can be easily reached by instruments introduced through the meatus, excision of the remnant of the ossicular chain and thorough curetting of the tympanic cavity will afford relief. Where, however, the process has extended further, and has invaded the most remote parts of the tympanic vault, and even the mastoid process, an intratympanic operation will not give relief, and some modification of the more radical procedure advised by Stacke<sup>1</sup> will be necessary.

(<sup>1</sup> Arch. für ohrenheilkunde, Vol. *xxi*, p. 201.)

This operation, you will bear in mind, consists in detaching the auricle and fibrous meatus from the bony structures and drawing the soft tissues forward so as to expose the margins of the bony canal. The mastoid antrum is then entered in the usual way, and the partition between the canal and the opening in the mastoid is broken down, and the superior wall of the bony meatus is removed by means of the chisel, thus giving free access to the tympanic vault and mastoid cells. Every vestige of diseased bone is taken away, the parts being under direct ocular inspection. The posterior wall of the canal is split longitudinally and the flaps thus formed are turned backward into the bony cavity, thus converting the external auditory meatus, the tympanum, tympanic vault, and the mastoid cells into one large cavity. The auricle is then replaced, and the incision behind the ear sutured. All parts of this space can be seen by speculum examination through the canal, and if all diseased bone has been removed, a satisfactory result can be confidently expected.

Which operation should be selected in any individual case depends, as before stated, upon the extent of the lesion. If properly selected, the simpler operation of removal of the ossicles and curetting of the tympanum gives results which are equally as satisfactory as those obtained by the more radical operation.

Out of forty-two cases reported by myself,<sup>1</sup> twenty-three were cured, thirteen were improved, and in six the result was unknown.

Grunert,<sup>2</sup> in a collection of one hundred and eighty-four cases, reports a cure of the otorrhoea in 74.2 per cent., although he states that in only 53.7 per cent. of the cases had complete cicatrization taken place. The two operations are not applicable to the same class of cases, the more severe cases naturally requiring the more radical operation.

It may, perhaps, be asked why so much time has been

<sup>1</sup> "Diseases of the Ear," N. Y., 1894, p. 411.

<sup>2</sup> Archiv für Ohrenheilkunde, Vol. xl, p. 188.

devoted to the simple subject of aural discharge, and why so much stress has been laid upon the very simple measures of treatment which have for their object thorough surgical cleanliness. The only excuse which I can give you is, that a discharge from the ear is always a symptom of some gravity. Barker<sup>1</sup> reports 2½ per cent. of deaths in eight hundred and twenty cases of aural suppuration, while Grunert and Meier,<sup>2</sup> out of three hundred and forty-five cases of chronic purulent otitis media, report a mortality of 3½ per cent.

The early treatment of all cases of aural discharge is, therefore, of the utmost importance. And such treatment falls usually to the general practitioner rather than the aural surgeon. The specialist only sees these cases when they become severe, and as soon as the general practitioner follows more carefully the principles above given, the services of the otologist will be much less frequently required.

As repeatedly stated, the chief object is to preserve thorough asepsis. The fatal results which follow a neglected otorrhoea depend upon the infection of the intracranial structures from the purulent focus within the middle ear.

I will not dwell upon these various intracranial complications, but will merely remind you that they are cerebral abscess, thrombosis of the lateral sinus, purulent meningitis, and epidural abscess. While these intracranial complications are not invariably fatal, their gravity is so well known as to excuse the rather lengthy consideration of the condition upon which they so often depend.

<sup>1</sup> Cited by Koerner, *Die Otitischen Erkrankungen des Hirns, der Hirnhäute und der Blutleiter*, Frankfurt-am-Main, 1894, p. 2.

<sup>2</sup> *Archiv für Ohrenheilkunde*, Vol. xxxviii, p. 208.

## THE RELATION OF AFFECTIONS OF THE UPPER AIR PASSAGES TO DISEASES OF THE EAR.

### ARE WE DOING ALL POSSIBLE FOR THE PRE- VENTION AND RELIEF OF EAR TROUBLES?

By FRANK S. MILBURY, M. D., of Kings County.

*October 13, 1896.*

In the preparation of this article, I have looked through a great deal of literature, and have been surprised to find that while most authors agree in saying middle ear affections are caused by an extension from the nasopharynx, very little is said about the now recognised fact that post-nasal catarrh is almost entirely due to an abnormality of the anterior nares. Very few of the older authorities say anything, or but little, about the affections of the nasal, post-nasal, or oropharynx in regard to the ear; and, until within very recent years, our information upon the subject has been meagre indeed; but now, modern writers are investigating and placing the facts before the profession, and we are thus enabled to deal with this important organ in a more scientific way than even five years ago. I am amazed, however, to observe how few of the old and wonderful searchers after truth, and ready writers, should hardly touch upon any of the accessory cavities to the nasopharynx; whereas, many of the younger men have gone into the matter in a thorough and lucid manner. In the recent works of Gruber and Politzer, considerable light is thrown out; but still, chiefly in reference to the rhinopharynx.

Since the able article, about twenty-three years ago, by Meyer of Copenhagen, who was the first to give to the medical world an exhaustive opinion upon adenoids in the nasopharynx and their results, it appears to me that nearly all information pertaining thereto has been elucidated. Still,



there is ever room for further thought and research. I remember that during my long residence in Vienna and other European cities, studying under Politzer, Gruber, Urbanchitz, Bing, Hartmann, and others, and in this country as well, but scant attention was given to the nose or naso-pharynx, they taking care of themselves, while almost exclusive attention was given to the ear. The results have shown what a sad end, in many cases complete failure, such treatment has proven, but now the older men are falling into line, and our results are far superior to what they were formerly.

At all ages, and in all cases of deafness or other ear affections that come under my care, I examine most carefully the nose, nasopharynx, oropharynx, and ears; and only on such scrutiny can we base our conclusions and prognosis.

Beginning with the nose, we may find septal spurs, deflected septum, and hypertrophies of the inferior and middle turbinated bodies, causing partial, or almost complete, stenosis of the nasal passages, with little or no pharyngeal complication; and yet deafness often prevails—why is it?

On looking into the anterior nares we may find the inferior turbinated so large as to wholly occlude them and prevent further inspection. This hyperplasia is caused by venous engorgement of the tissues covering the turbinated bodies, and is undoubtedly brought about by frequent attacks of acute rhinitis caused in a measure by irritants, as septal spurs, deviated septum, etc. At first, the mucous membrane returns to its normal condition, but the repetition of these attacks will eventually end in the fibrous tissue remaining permanently hypertrophied. Patients so affected complain of frequent colds in the head, difficulty in breathing, asthma, and frequently impaired hearing during such stenosis, becoming gradually more and more so, increasing with repeated attacks, and remaining permanent if the nares become more or less constantly occluded. Even if the nose is successfully treated, and free respiration restored, and parts normal physiologically, the hearing may not be improved if the trouble be of long standing. Still, there are many exceptions. The

ear trouble so caused, is chiefly catarrh of the middle ear, but, of course, there are very many other forms of ear disease brought about by nasal occlusion. We often find interference with ventilation through the Eustachian tubes, but in many such cases their patency is normal; yet, there is deafness, and, according to Dench and others, it is produced by the turgescence of the turbinated bodies interfering with the venous return current from the labyrinth, causing labyrinthine congestion. We know that this is purely theoretical, and still, no more plausible view has been advanced. Somewhat proving this, is the fact that intranasal surgery often improves hearing, tinnitus, etc., in all conditions effected by the nasal passages.

Another serious condition of the nose which affects the ears is atrophic rhinitis and nasopharyngeal catarrh, a disease of early life rarely existing under five years of age, and becoming worse as the patient grows older. There is a diversity of opinion among the best authorities as to its cause, and here I will not discuss it. Around the orifices of the Eustachian tubes we often find a residue acting as an irritant and setting up frequent inflammations, which finally end in a narrowing of the tube and rarefaction of the air in the middle ear; or, on the other hand, the tube may be too open, and in time cause a flaccidity of the tympanic membrane, etc. Hypertrophy of lingual and faucial tonsils, elongated uvula, and adenoids, are all responsible for much of the trouble cited above, and have been copiously written about by nearly all authors on the ear. The pharyngeal tonsil is formed of adenoid tissue, and not only becomes frequently enlarged through chronic inflammation of the parts, but by the formation of new adenoid tissue, the whole choanae and vault may become completely filled, pressing into the nares, Eustachian tubes, and forcing the soft palate forward. They are rarely found on the protuberances around the Eustachian tubes or on the side walls of the pharynx.

There seems to be in most cases, a connection between adenoids and enlarged faucial tonsils, and, occasionally, even

the adenoid tissue at base of tongue. Sajous states that there may be quite extensive adenoid vegetations without the Eustachian tubes being involved; but, in my opinion, in every case of adenoids the tubes are more or less implicated. In this connection, the tissues of the vault often become oedematous, which probably extends into the Eustachian tubes, causing aural disturbances. Sometimes extensive adhesions between adenoids and Eustachian tubes are found, presumably caused by the frequent inflammatory action of the pharynx, in acute coryza, pharyngitis, etc. In my opinion, every child at a very early age should be carefully examined for adenoids, which, if found, should be at once removed, and thereby much needless suffering would be saved to humanity. They act upon the ear in different ways, the principal one being the blocking up of the Eustachian orifices, causing rarefaction of the air in the middle ear, which will eventually result in a retraction of the membrana tympani. A chronic congestion and hyper-secretion, if long continued, will end in adhesions and ankylosis of the ossicles and deafness and tinnitus.

It is a mooted question whether the adenoids press on the pharyngeal openings of the tubes, or whether their interference with the muscles of deglutition causes the trouble by producing an incomplete opening of the tubes. In either case, we know that in diphtheria, measles, scarlet fever, whooping-cough, mumps, teething, tuberculosis, typhoid, etc., the septic secretions are thrown into the middle ear, and, by their retention, the destructive process begins. To whatever cause nasal or pharyngeal stenosis may be due, drainage of these parts is interfered with, and hence the middle-ear difficulties. Blowing the nose forcibly, in nasal obstruction, is liable to force secretions into the ear.

A few years ago, while sojourning in Greece, I called upon several of the leading physicians of different cities, for the purpose of investigating nasal and pharyngeal disease, and, to my surprise, found that such affections are almost unknown, and, as a consequence, but little ear disease prevails. I am

fully convinced that if there were no abnormality of the upper air tract, we should have but little ear disturbance. I shall not burden you with statistics, but merely cite a few illustrative cases.

CASE I.—November 30th, 1893, Fred W., aged 31, consulted me for relief of nasal catarrh. He is a strong and fully developed man, active in business and brilliant socially. Inspection showed great hypertrophy of both inferior and middle turbinated, a spur of the septum, slight rhino-pharyngitis, and elongated uvula. Incidentally, in eliciting the history, I found that he had had scarlet fever and diphtheria in early childhood, and since, discharge from both ears; and he stated that now his hearing is very imperfect, with loud roaring in head. When I suggested treatment, he said that he did not come to me for that, but for his nose and throat; that he had been in the hands of several good men for his ears, but with no relief.

I find that both tympani are intact but greatly retracted, the left mostly with short processes very prominent. Bone conduction with tuning fork better in left than A. C., and the reverse in right. Hearing distance with watch: right, 18-40; left, 1-40. I treated his nose, removing spurs, reducing turbinated and excised uvula.

On April 7th, 1894, discharged him in fairly good condition, and, much to my surprise, his hearing wonderfully improved, although I had in no way done anything directly to his ears.

April 7: H. D. W. R., 38-40; L., 19-40.

CASE II.—September 14th, 1895, Mr. John H., aged 22, student in mechanical engineering, consulted me in regard to deafness and noises in head, and difficulty in breathing through nose. Has had impaired hearing since about ten years old. Has had the ordinary diseases of childhood, but could not trace any connection between them and his deafness. Tympani greatly retracted and hearing distance with watch in right ear, 1-40; left, 6-40. Is not robust. When about ten years of age, was hit forcibly on nose with base ball, crushing the bridge of the nose, flattening it down considerably. On inspection of the inner part of that organ, I found the bony septum fractured, one portion pressing to the right and the other to the left, causing almost complete stenosis. I concluded that the only thing to do was to break it (the septum) up and put it in its normal position. Consequently, on Sept. 24th, with the assistance of two physicians, he was anaesthetised, and by Roe's



and other methods, the septum was brought into proper position and supported on each side. By the operation, the nasal bridge was appreciably elevated and made a much more aesthetic nose than the young man formerly possessed. He soon recovered from the operation, and as soon as the dressing could be left out of the nose, hearing was found to improve rapidly, and by Dec. 1st, 1895, H. D. R. watch was 21-40 ; L., 5-40, and up to this time I had not touched the ears. He now returned to college in a distant city, and thus passed out of my hands, and I did not see him again until about the middle of June, this year, when his hearing R. is 38-40 ; L., 14-40. I again took him in charge, removing some septal lodges, and directing attention to the ears, further increasing the hearing power.

CASE III.—December 20th, 1895, Charles B., nine years of age, referred to me by family physician on account of deafness. Examination shows much turgescence of turbinated bodies, causing considerable occlusion of nares. Vault almost completely filled with adenoids. Takes cold easily and has frequent coryzas. General condition, bad. Is a decided mouth breather.

Hearing distance : Right ear, with watch, 10-40 ; left, 1-30.

Performed adenotomy, and there was immediate improvement in hearing and subsidence of the turgescence of the turbinateds. On July 1st of this year, he could hear my testing watch at 60 inches in both ears, which is 20 inches more than I usually register. The lad had no other treatment, except acting on my advice to be out in the cold, bracing atmosphere as much as possible. His colds disappeared as if by magic.

CASE IV.—John R., sent in by family physician, ten years old, has O. M. purulenta in both ears ; very offensive ; perforations in lower third. Ossicles in normal position ; H. D. R. (watch) C-40 ; L., C-40. Pharyngeal vault filled with adenoids. Adenotomy and tonsilotomy. In six weeks, discharge has completely stopped and has not returned. Hearing in both ears now 30-40.

CASE V.—Annie S., seven years old, came to me through the family physician. Found an extremely purulent discharge from left nostril, and with occlusion of both. Also, O. M. purulenta, right and left. The discharge from nose had existed since she was two years old. Had never had any of the diseases of childhood. Symptoms indicated extensive adenoids, but examination revealed a normal oropharynx and no adenoids, and only a slight nasophar-

yngeitis. The child was so sensitive that it was almost impossible to determine anything, but the sound struck something that appeared like necrosed bone. A few days later, anaesthetised and removed a large, rough, serrated shoe button. The sound passing over the uneven surface is what deceived me in thinking it might be necrosis. The button had shoved the septum over to the right. I straightened it with Adams's forceps. In a very short time she was in excellent physical condition; nose well; discharge from ears had ceased; hearing good; but small perforation in tympani.

# PROSTATIC ENLARGEMENT: REMARKS INTRODUCTORY TO A DISCUSSION ON ITS NATURE, DIAGNOSIS, AND TREATMENT.

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*October 13, 1896.*

Although the subject proposed for discussion has long been under the scrutiny of the profession, and notwithstanding the progress made toward its elucidation, there is still need of much additional information respecting an ailment which is so distressing to humanity. The suffering caused by obstructed urination was graphically recorded by many observers in remote times, but the origin of any particular kind of obstruction was not discovered until the dissection of human bodies became frequent, and until Riolan, early in the seventeenth century, suggested that the neck of the bladder could be obstructed by a tumor of the prostate. Marked advances toward a more exact knowledge of the nature and treatment of prostatic enlargement and its effects began with this century, and honourably associated with these advances are the names of Everard Home, Jean Civiale, and Auguste Mercier. These eminent men were truly venerable pioneers in this field of investigation, and the present generation is reaping the benefits of their labours.

The results of recent researches into the nature, effects, and treatment of prostatic enlargement will, this day, be made known to the association, by several inquirers, in the hope that the debate they evoke may serve to help the general physician in the difficulties he sometimes encounters while endeavouring to form a diagnosis, and to enable him to give safe and speedy relief to the sufferers who have recourse to him in their distress.

The questions propounded for discussion are:

I. What is the nature of prostatic enlargement?

II. How is prostatic enlargement recognised?

III. What are the effects of prostatic enlargement, and how may they be counteracted?

IV. When is operative interference indicated, and what operations may be safely performed for prostatic enlargement?

Some consideration of the few subjoined points in the anatomy and physiology of the prostate is suggested as likely to be a helpful preliminary step in the direction of a right estimate of deviations from its normal state. This vesical prostatic body,—said to have been discovered by Nicolas Massa about the middle of the sixteenth century—this mass of muscular and glandular substance, though ordinarily shaped somewhat like a chestnut, is subject to many variations, not only of form but of size and weight, as ascertained by the dissection of great numbers of specimens taken from men between the ages of twenty-five and fifty years, that apparently had had no serious urinary disorder. Among these specimens are very flat and short prostates, one inch in length, not over half an inch in thickness, but occasionally very broad at the base, reaching two inches; there are also long and disproportionately slender prostates; and a few examples of the nearly globular, which are one inch and a quarter in mean diameter. In a few cases, they are undersized, though of regular form; while others are in excess of size and weight of the normal typical organ, whose average length from base to apex is one inch and a half, whose average breadth near the base is one inch and three quarters, whose average thickness near the base is seven eighths of an inch, and whose average weight is five drachms.

Springing from the antero-inferior part of the bladder, the prostate is directed downward and forward, its base embracing the vesico-urethral orifice and the anterior extremities of the seminal vesicles together with the ends of the spermatic canals, its apex being lost in the membranous portion of the urethra. Its antero-superior convex surface, distant from the pubic arch about three quarters of an inch, is covered by



a closely adherent layer of muscle-tissue bands derived from the anterior wall of the bladder. Upon and among these superficial muscular bands are many veins which end in the plexus of Santorini, whose efferent veins pass along the sides of the prostate, where the muscular layer is much thicker, and gives attachment to the pelvic fascia and to the levator ani muscle. Its postero-inferior nearly flat surface, resting upon the lower end of the rectum, is invested with a prolongation of the thin layer of muscle-tissue covering the seminal vesicles. This muscular layer is attached to the prostate by moderately dense connective tissue, and to the rectum by very loose connective tissue. Thus the prostate is securely encapsulated by layers of connective and muscular tissue. Its two lobes are united, from base to apex, by a superior isthmus and by an inferior isthmus, and this union forms the prostatic region of the urethral canal. The posterior third of the inferior isthmus, much thicker than the anterior two thirds, is called by Home the third lobe, and by Mercier, the supramontanal region, because it is above the *veru montanum*.

The prostatic body consists largely—from two thirds to three fourths of its bulk—of smooth muscle tissue, which encloses the acini and tubes of great numbers of compound racemose mucous glands; the acini containing microscopic albuminoid sympexia, which first make their appearance during adolescence. The writer has found sympexia in the acini of prostatic mucous glands of boys of sixteen years. These acini in adults are about the one-three-hundredths of an inch in mean diameter; some of them are round and others are oval or oblong. In disease, they are often distinctly visible to the naked eye. The tubes of different bunches of acini unite to form larger tubes, and these coalescing make up terminal excretory ducts, the greatest numbers of which open obliquely on the floor of the prostatic sinus at either side of the urethral crest. The orifices of some of the excretory ducts appear on the upper and lateral walls of the sinus, and a few open inside the utriculus. The posterior third of

the lower isthmus ("third lobe") seems to be the part which is richest in mucous glands.

The prostate is well supplied with blood and lymph vessels, and derives its innervation mainly from the sympathetic system; the acini, the vessels, and the nerves, being accompanied by fibres of connective tissue, which form their delicate framework.

Physiologically considered, the prostate is both a genital and urinary organ: Genital, because its mucous secretion contributes largely to the dilution of the semen, and because, as a muscle, it helps much the ejaculation of the semen; urinary, because it aids in expelling the urine, being an integral part of the urethra. As a genital organ, it is practically rudimentary until the period of adolescence, and does not attain its full size until about the age of twenty-five. It increases slightly in bulk after the age of fifty.

*Question I. What is the Nature of Prostatic Enlargement?*—Before endeavouring to answer this question, it is proper to say that the term enlargement is here used instead of "hypertrophy," with its strict meaning of overnourishment and its arbitrary signification of increase in size of existing individual component parts of organs as distinguished from hyperplasia,—the multiplication of cellular elements—which occurs in the prostate as well as in other parts of the body. Although increase in size of the acini occurs in the prostate, hypertrophy cannot, with accuracy, be employed in respect of this organ, because the morbid states which give rise to increase of its volume are many, and in none of them is the organ overnourished. The contrary seems to be the case, for the venous stasis which exists in diseased conditions of the prostate surely points to under rather than overnourishment. Physical exploration during life and dissection after death have long since demonstrated that prostatic enlargement is neither a single morbid entity nor a single morphyic entity.

The chief morbid states that cause increase in bulk of the prostate are as follows:

1. Acute inflammatory action gives rise to prostatic enlargement, which disappears when resolution is completed, or which persists longer, as in the case of suppuration and abscess formation. In some cases, acute prostatitis ends in the gradual shrivelling of the organ instead of its enlargement. A variety of acute inflammation with oedema of the prostatic mucous membrane, extending to and closing the urethro-vesical orifice and involving the prostatic ducts, causes not only retention of urine, but often general swelling of the prostate, which, ordinarily, is transitory. Sometimes, however, this prostatic swelling persists several weeks, or even several months, after the subsidence of the acute inflammation. In subacute prostatitis, the persistence of swelling is even more common than in this variety of the acute form.

2. Chronic parenchymatous prostatitis is a cause of transitory as well as of permanent enlargement of the organ: Transitory, when, after a suitable course of treatment, the swelling vanishes, or, when rapidly increasing calcified symplexia are artificially removed, the prostate soon decreases or even shrivels. Permanent, when dilatation of the acini occurs together with some increase of the muscle tissue, the calcified symplexia remaining almost microscopic in size. Such prostates generally become very large, are comparatively soft, and occur with greater frequency than the other kinds. In his work on "Diseases of the Urinary Apparatus," "Phlegmasic Affections," 1892, the writer discusses the subject of chronic prostatitis and its effects at p. 170 *et seq.*

3. Dilatation of the prostatic sinus sometimes greatly increases the bulk of the organ. Of this kind, three cases have been observed by the writer. In one case, the ectasia was due to the damming up of the urine by a narrow urethral stricture. The cavity thus formed had a capacity of sixty cubic centimeters. The walls of the sac, consisting of the substance of the prostate, were of irregular thickness, from three to twelve millimeters. In consequence of cystitis and of frequent violent efforts to urinate, the bladder capacity

was diminished, the walls of this viscus were thickened to more than a centimeter, and there was on the right side, close to the ureter, a diverticulum whose capacity was seventy cubic centimeters. There was also a well-marked urethro-vesical bar. The kidneys, which were not preserved after examination, showed signs of inflammation and fatty degeneration, and weighed two hundred and six grams. In another specimen, the dilatation was quite as great and the prostatic sac contained a calculus which nearly filled it.

4. Retention cysts—due to extreme dilatation of acini from accumulation of the secretion owing to closure of excretory ducts—sometimes attain such dimensions as to increase very considerably the bulk of the prostate or interfere with urination. A prostate of normal size, dissected by the writer, contained a superficial retention cyst, one centimeter in diameter, at the right of and almost closing the urethro-vesical orifice. Large degeneration cysts are also sometimes found in this organ. Hydatid cysts very rarely occur in the substance of the prostate; they are generally found in its immediate vicinity, and by mechanical pressure interfere seriously with urination.

5. Tuberculosis, though of rare occurrence in the prostate, increases markedly the volume of this organ, which it finally destroys. One specimen of this kind is in the writer's collection.

6. True adenomata—new growths of adenoid substance with imperfectly elaborated and sterile structure—which do cause increase in size of the prostate, are very rare, and are transformable into carcinomata, and sometimes into adenosarcomata. Careful examination of many hundreds of diseased prostates, during the past thirty years, has revealed to the writer only three cases of carcinoma of this organ.

7. Fibrous tumors are of extreme rarity and are transformable into sarcomata, but primary sarcoma does sometimes occur in the prostate to give rise to its enlargement.

8. Diffuse increase of the prostatic fibrous framework is also very rare, and, like the isolated fibrous tumors, is liable



to sarcomatous metamorphosis. Although diffuse increase of the fibrous tissue causes but little augmentation in bulk, it obstructs urination nearly as much as do very large prostates, owing to its hardness and to the urethro-vesical bar which it forms.

9. Circumscribed multiple myomata are known to cause increase in size of the prostate. Good illustrative specimens of this kind are preserved in the writer's collection.

10. Diffuse increase of muscle tissue makes up the greater part of the substance of some hard prostates, which do not always become very large, but cause obstruction to urination by forming a bar at the vesical neck.

Although the prostate is often uniformly enlarged without producing serious effects, it is clear that its enlargement cannot reasonably be regarded as a single morphyic entity, as shown in the following statement of the main varieties of form:

1. The enlargement may be limited to one lobe of the prostate, or may involve only the two lobes.

2. Enlargement of the lobes may be unequal, one being much larger than the other.

3. One or both lobes may project into the bladder.

4. One or both lobes may encroach upon and nearly close the prostatic region of the urethra, rendering its course irregular or even spiral.

5. The posterior third of the lower isthmus alone may be enlarged in the form of a roundish pedunculated tumor, or of an irregular sessile mass, or of two separate sessile growths.

6. The whole of the lower isthmus alone may be enlarged.

7. Both lobes and the posterior third of the lower isthmus may be enlarged.

8. Both lobes and isthmi may be enlarged.

9. The enlargement of both lobes may be downward and backward toward the rectum, overlapping the anterior third of the seminal vesicles.

10. There may be only a bar at the neck of the bladder, with little if any general enlargement of the prostate.

11. There may be intramural isolated tumors which are not perceptible before incision of the organ, or which, being sometimes superficial, are discoverable through rectal exploration.

12. Multiple tumors, from one or both lobes, may project into the urethra, with or without enlargement of the posterior third of the lower isthmus.

13. Multiple tumors, with or without general enlargement, sometimes spring into the bladder from the posterior third of the lower isthmus, and cause true incontinence of urine.

Here, then, are greatly differing morbid states which cause enlargement of the prostate with many varieties of form. Does it not seem plain, in consideration of such diversity of morbid states and freaks of form, that no exclusive method of treatment of these conditions can consistently be adopted, and that the proper management of any case must be premised by a diligent inquiry into the nature of the particular morbid state and the form and extent of the enlargement?

Chronic progressive enlargement, being the most frequent of the diseases of the prostate in elderly men, is entitled to the largest share of attention. Very often physicians are consulted by younger brethren in behalf of patients, under the age of forty, supposed to be suffering from chronic enlargement of the prostate, but in reality are harassed by dysuria, due to transitory prostatic swelling, or to spasmodic contracture of the vesical neck, either being a common sequel of urethritis, or of persistent hyperlithuria. This misconception of the nature and era of chronic prostatic enlargement still exists in the minds of some physicians, notwithstanding the frequent reiteration, for many years past, that this affection does not generally occur until the sufferer has attained two score and ten years of age. The inexperienced are constantly mistaking transitory inflammatory swelling of the prostate for the chronic, slow, steady increase in bulk of this prostatic body, which very seldom begins before the age of fifty. It therefore seems justifiable to emphasise the often repeated statements that chronic progressive enlargement of the prostate is a disease of elderly men; that not more than

forty per centum of men between the ages of fifty and seventy years are affected with chronic enlargement of the prostate; that the ailment does not ordinarily manifest itself before the age of fifty-five; that it rarely begins after the age of seventy; and that out of the forty per centum of cases not more than one in every six suffers seriously from disordered urination.

During the first half of this century, progressive enlargement of the prostate was regarded, by some physicians, as a result of chronic inflammatory action, but that opinion was not shared by many others, who, however, offered no better explanation, although they admitted the existence of passive congestion of the organ. A reëxamination of the question, with the aid of modern methods of study, has led to the belief that phlegmasic action—often excited by persistent hyperlithuria, which is so common between the ages of fifty and sixty—is a potent factor in the causation of this chronic enlargement. Post-mortem evidences point to a low grade of inflammation of the prostatic parenchyma, and microscopic inspection of the soft, enlarged prostate of elderly men shows that its structure is not identical with what is known as a new growth, but that the increase of bulk is due to dilatation of the acini with augmentation of muscle-tissue bands. Such increase of muscle tissue seems to be an effect of violent and frequent contractions of the bladder and prostate in their efforts to expel retained urine. Therefore, this increase of muscle tissue is secondary to the diseased state of the acini involved in the passive phlegmasia, that yields an exudate sufficient to distend them and float the sympexia, which are soon encrusted with concentric layers of calcium phosphate, and thus become irritant bodies serving to aggravate the existing condition. Many of these calcified sympexia are discharged through dilated ducts and are found in the urine, but others remain in the acini or are impacted in ducts, and the consequence is accumulation of the secretion, further dilatation of the acini, and general or local increase of the prostate.

Among the dissected prostates of men between the ages of fifty and fifty-five, many of the specimens showed marks of beginning enlargement of the lower isthmus and lobes, and also in the form of small foci of dilated acini in the substance of the organ. In a few instances, the foci projected to the surface of the posterior third of the lower isthmus. Some of these foci were not more than a millimeter in size; others were between two and three millimeters. The process of enlargement is so slow that the organ does not become inordinately bulky until the sufferer is far advanced in years. In some cases, the muscle tissue is greatly in excess, while in the vast majority, it is the dilatation of the acini which predominates. The gritty calcified symplexia are discernible when the prostate is incised with a sharp knife.

Analysis of the record of nearly every new case affords some evidence of the phlegmasic origin and slow development of chronic enlargement of the prostate. The following example is cited out of many carefully-studied cases:

A patient—now, May, 1896, fifty-five years of age—who had suffered from persistent hyperlithuria for more than five years before his first symptoms of chronic prostatitis, noticed, at the age of fifty-two, a slight muco-purulent urethral flow, particularly during defecation, together with uneasy sensations in the perinaeum and rectum, but did not apply for treatment until a year thereafter, when he began to be annoyed by unduly frequent urination, for which he consulted the writer. At that time—when he was fifty-three years of age—there was no appreciable prostatic enlargement, and he was able to empty his bladder. In the course of a year, he was again examined through the rectum, and the volume of the prostate seemed slightly increased, but there was no residual urine in the bladder. Six months after this, he had an attack of cystitis, during which his urine was purulent and fetid, but became clear after six weeks' treatment, when his physician declared him well. Nevertheless, the frequency of urination by day increased, and he was obliged to rise to urinate twice each night. He returned to New York, in May, 1896, complaining of pain in the hypogastric region and perinaeum, and of frequent desire to urinate day and night. His act of urination, in presence of the writer,



was characteristic of urethro-vesical obstruction. At the first attempt, he could pass only an ounce of urine; after moving about for two or three minutes, he passed four ounces, and a few minutes later, two ounces; in all, seven ounces. A curved silk-web catheter was then easily introduced, and four ounces of clear residual urine drawn. Digital rectal exploration revealed undue rotundity of the prostate and an increase in volume estimated to be about one third in excess of the normal average. By the aid of Mercier's short-beaked rectangular staff, a moderate increase of the posterior third of the inferior prostatic isthmus, together with a corresponding depth of the lower vesical fundus, was detected, and this accounted for the residual urine drawn. The hatching of the prostatic enlargement, in this case, seems to have lasted at least six years.

In the case of a man aged seventy-seven years, prostatic enlargement had existed ten years before complete retention of urine occurred and subsequent regular catheterism became necessary. In that time, the prostate had not more than doubled in size. In another case, fourteen years had elapsed from the beginning of enlargement before the catheter became indispensable. The patient was at that time eighty years of age, and during these fourteen years the prostate had more than quadrupled in size.

Mercier recognised the dilatation of the acini and the calcification of the symplexia, but was one of those that rejected the notion of the phlegmasiac origin of chronic enlargement of the prostate (*"Recherches,"* etc., 1841); and yet he believed this enlargement to be due, in great part, to passive congestion. This admission is surely favourable to the phlegmasiac theory. Some modern writers regard chronic enlargement of the prostate as adenoma, but this view is certainly not in accord with the present definition of an adenoma, which is: a new growth of adenoid substance with imperfectly elaborated and sterile structure. It has already been stated that adenoma, as well as other new growths, are found in the prostate, but that their occurrence is very rare. In the great majority of cases of chronic enlargement, there is not the least appearance of new growth of glandular

substance. The acini are not increased in number, but are greatly dilated—some of them from five to twenty times their normal dimensions—and ordinarily the muscle tissue is only slightly increased. Besides, there are, in and around these prostates, unmistakable signs of secondary phlegmasiac action. The periprostatic veins are gorged with blood, and in some cases are occluded by phleboliths. Although the surrounding tissues are indurated, the substance of the prostate is soft and spongy.

The diseased prostate sometimes attains very great dimensions. Among the last specimens dissected, one, taken from a patient who died at the age of sixty-seven, was, by external measurement, two inches and a half in thickness, two inches and a quarter from base to apex, and three inches and a half from side to side. In addition, the posterior third of the lower isthmus, one inch and a half broad, projected one inch and a quarter into the bladder, bulged toward the rectum, and pushed aside the spermatic canals and seminal vesicles, which were shrivelled and hardened. The length of the prostatic region of the urethra was two inches and three fourths. The vesical wall at the lower fundus was much indurated and irregularly thickened from half an inch to three fourths of an inch. The bladder, whose capacity did not exceed four ounces, contained a small phosphatic calculus. The calibre of the ureters was more than doubled, and there was on both sides pyelonephritis, the kidneys being more than twice their natural size. Notwithstanding the great increase of this prostate, the introduction of instruments was exceptionally facile; and the fact was accounted for after dissection, when the two lobes were found to be equally enlarged and the prostatic urethra very slightly curved, owing to inordinate thickness of the superior isthmus, the whole of the inferior isthmus being also very much enlarged. In a specimen prepared some years ago, the posterior third of the inferior prostatic isthmus made up about one third of the bulk of the diseased organ, in the form of a rounded mass, two inches in mean diameter, which nearly

filled the lower vesical fundus. Many examples of extreme prostatic enlargement are on record, but only a few of them need now to be mentioned. In his work on "Diseases of the Prostate," fourth edition, Sir Henry Thompson figures and describes a prostate which was "nearly the size of a cocoa-nut, and weighed nine or ten ounces." The patient "expelled his urine very frequently and with difficulty, but emptied his bladder completely." This is a valuable illustration of the fact that general enlargement of the prostate, with great protrusion of the so-called third lobe, does not always abolish urination. Ford is cited by Mercier as having published, in 1802, the account of a diseased prostate that weighed nine ounces. Bartholinus is said to have seen a prostate equal in size to a man's head. This was regarded by Mercier as an exaggeration. Probably the largest prostate exhibited in modern times is the specimen figured by Dr. F. S. Watson, of Boston, in his essay on "The Operative Treatment of the Hypertrophied Prostate," 1888, plate xvii. The bladder having been dissected away, the diseased mass was photographed. The picture measured seven inches and one eighth in extreme longitudinal diameter, five inches and three fourths in largest transverse diameter, and four inches in smallest transverse diameter.

The other extreme in point of development is illustrated by a specimen taken from an elderly man whose death was due to the consequences of obstruction to urination by a very slight enlargement of the posterior third of the lower isthmus, which, however, had almost entirely closed the urethro-vesical orifice, the rest of the prostate being not more than two thirds the average size.

*Question II. How is Prostatic Enlargement Recognised?—*

To ascertain the existence of prostatic enlargement is often easy, but to identify any particular kind of enlargement requires a clear discernment of the several morbid states and varieties of form to which this organ is subject. Hurried, superficial examination is almost certain to lead to erroneous diagnosis, and this to improper treatment. A case in point

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is that of an elderly man, affected with prostatic enlargement, whose physician seemed to take into account only the fact of the enlargement, and therefore suggested what he conceived to be a radical operation. The patient then consulted another physician, who, after a very careful examination of the case, advised against any operative interference, for the time being, other than evacuative catheterism and daily vesical irrigation, because his diagnosis was sarcoma of the prostate, with a secondary nodule in the hypogastric region of the abdominal wall. The prostate then increased so rapidly that suprapubic cystotomy for drainage became necessary, and afforded great relief to the doomed sufferer.

In its inception, enlargement of the prostate is seldom recognised. Patients very rarely seek medical advice until the disease has advanced sufficiently to impede urination. In the case of those who do not suffer in consequence of the enlargement of their prostates, this condition is often only incidentally discovered. Large prostates, that had not caused the least inconvenience and the existence of which was never suspected, have been found in the bodies of old men dead of acute disease. In like cases, the enlargement is generally uniform. It should, however, be borne in mind that these prostates are liable to such swelling—due to exposure or to debauch on the part of the patients—as to cause retention of urine and cystitis, necessitating frequent catheterism; and that this swelling often lasts many weeks or even months, finally subsiding so that the patients are able to urinate in a good stream and empty their bladders.

When urination is much disturbed, day and night, in an elderly man free from urethral stricture or vesical stone or tumor, the existence of multiform enlargement of the prostate may be predicated. It has already been said that the hatching of chronic prostatic enlargement is a very slow process, several years generally elapsing before any symptoms of impediment to the exit of urine are perceived. The patient then first becomes conscious of something being wrong with his urinary apparatus, on account of frequent



desire to urinate, and, later, of difficult and sometimes painful urination; but these symptoms, being common to several other urinary affections, are likely to lead him astray as to the nature and, consequently, as to the management of his complaint. Frequent and difficult urination by day and by night, a sense of fulness and weight in the perinaeum and rectum, lumbago, and sciatica, are valuable symptoms when rightly interpreted. Frequent urination points to stagnation of urine and consequent cystitis. Difficult urination is evidence of obstruction, but the obstruction may be of the nature of a urethral stricture or of the impaction of a calculus in the urethra. However, in the case of an elderly man, free from urethral or calculous disease, difficult and frequent nightly urination forebodes prostatic obstruction. Chemical and microscopical examinations of the urine, so helpful in diagnosis, prognosis, and therapeutics, need to be made from time to time during the conduct of each case.

The mode of urination as indicative of prostatic obstruction is worthy of special notice. The patient stands leaning forward with his legs spread. After some delay the urine issues in a small, feeble, vertical stream, which soon stops, to be followed by the dribbling of twenty or thirty drops, that are succeeded by the small stream; and this continues until, in the course of two or three minutes, one or two ounces may thus be expelled. This process is repeated two or three times, with varied success, when the introduction of a catheter reveals the presence of six or eight ounces of residual urine. This kind of urination only specialises obstruction from prostatic enlargement; it does not characterise any of the varieties of form.

Digital rectal examination reveals, with sufficient precision, the extent of enlargement of one or both prostatic lobes, abnormal rotundity of these lobes, or multiple nodules indicating the presence of large calcified symplexia, isolated myomata, or cancerous growths. Hardness does not necessarily signify induration of the whole prostatic mass, for the peripheral parts only may be indurated, while the central portion

may be soft and spongy. Exploration through the urethra with Mercier's rectangular short-beaked metallic staff reveals the existence of a urethro-vesical bar, or of a more or less extensive growth of the posterior third of the lower isthmus. Digital rectal exploration is negative when there is no enlargement of the prostatic lobes. In that case, the physical diagnosis is made entirely by the urethral route, either with the rectangular staff or with the cysto-pylometer, by the aid of which the thickness of a urethro-vesical bar may be determined.

The exact statement of the diagnosis of prostatic enlargement is of importance, not only to the practising physician, but to the vital statistician. Too frequently only a condition common to prostatic enlargement, urethral stricture, and stone in the bladder, appears in tables of diseases, without explanation, as "retention of urine, chronic cystitis," etc. The writer, in endeavouring to obtain information respecting the relative frequency of the urinary diseases of males, examined the annual reports of many institutions for the care of disabled elderly men, and found it very difficult, and sometimes impossible, to determine the character of the diseases catalogued in these reports, whose great value would, undoubtedly, be much enhanced if the compilers were permitted to place in brackets and in italics the name of the primary disease, as, for instance: Retention of urine [*from urethral stricture, from prostatic enlargement, or from vesical stone*], as the case may be; chronic cystitis [*from prostatic enlargement, from urethral stricture, or from vesical stone*], etc. Such additions would lighten the labours of, and be gratefully appreciated by, medical investigators and statisticians.

*Question III. What are the Effects of Prostatic Enlargement, and How may they be Counteracted?*—Uniform general enlargement of the prostate, without encroachment upon the urethra or bladder, except in the case of malignant disease, or of tuberculosis, gives no inconvenience to the affected individual, who, however, if he be exposed to cold and mois-

ture, after excess in drink, is likely to suffer from retention of urine, due to transitory swelling of the already enlarged prostate, which generally yields to rest, systematic catheterism, and vesical irrigation.

The effects of those forms of prostatic enlargement by which the capacity of the urethra, or of the vesico-urethral orifice, is lessened are soon felt by the bladder, that vainly struggles, for weeks or months, against the obstacle, to rid itself of irritating urine. Hence the dysury, the strangury, and the increase of muscle tissue of the bladder and of the prostate itself. The stagnant, alkaline, slimy urine affords sustenance to myriads of saprophitic and other organisms, and the resultant cystitis adds to the distress of the patient. Later, the phlegmasic process, if not checked, creeps up the ureters, reaches the kidneys, and the sufferer succumbs to ascending microbic pyelonephritis. Such is the end of neglected cases of prostatic obstruction to micturition. These ill effects are often counteracted by regular evacuative catheterism—from two to five times in the twenty-four hours—and thorough cleansing of the bladder with a solution of corrosive chloride of mercury, 1 to 10,000, adding thereto one per centum of phenol, or 1 to 1,000 of formalin. In the course of a few days, a solution of nitrate of silver, 1 to 5,000, may be used once daily for vesical irrigation. This weak solution of silver nitrate seems to act beneficially upon the vesical epithelium, while it is as destructive of the bacteria as are the other antiseptics. When the bladder is very foul, the sublimate and phenol solution may be used in the morning, and the silver-nitrate solution in the evening, after having rinsed the bladder with warm sterilised water. Not more than four ounces of fluid should be injected into the bladder at a time, but three or four such injections may be made at each sitting. This palliative treatment is of great value, and often is the only kind indicated or practicable. In the case of small, recurring, phosphatic concretions, irrigations with acidulated water—one part of hydrochloric acid to two hundred parts of warm water—destroy the calculi

without injuring the vesical mucous membrane. The same result is obtained by the use of acetate of lead, first suggested by Dr. Hoskins, of Guernsey,—one part of acetate of lead and one part of acetic acid to four hundred parts of warm water.

The treatment designed to counteract many of the ill effects of prostatic enlargement may be summed up as follows, and consists in taking suitable means:

1. To combat hyperlithuria.
2. To secure moderate acidity of the urine.
3. To empty the bladder artificially—slowly and gradually, when it is much overdistended.
4. To effect gradual hydraulic dilatation of the bladder when its capacity is lessening.
5. To combat existing cystitis by daily vesical irrigation.
6. To disinfect the urinary tract, as well as the prepuce and glans penis.
7. To prevent calculous formation.
8. To preserve or improve the physical condition of the patient by such hygienic or medicinal treatment as may be required.

It is often asked: "What kind of catheter is best and safest for general use in cases of retention of urine due to prostatic enlargement?" If this enlargement were invariably the same in form and size, one single kind of catheter would, undoubtedly, always answer the purpose of relieving the bladder. But, since the enlargement is so frequently multi-form and progressive, the physician must be provided with several species and varieties of catheters, out of which he may select one of a form suitable to the particular variety of prostatic enlargement affecting his client. The pliable catheters, with lateral or terminal eye, made of silk webbing coated with varnish, or of India rubber, are the safest that can be used. There are ordinarily eight different forms: (1) The straight, which may be used with a stylet, in the case of false routes, according to the method of Hey; (2) the curved; (3) the elbowed; (4) the crutched; (5) the



double elbowed; (6) the straight olive tipped; (7) the curved olive tipped; (8) the "velvet-eyed" India-rubber catheter. No instrument which cannot be rendered aseptic should be used, neither should any fatty substance be employed to anoint the catheters. Soap, deprived of glycerine and free alkali, is an efficient and unirritating lubricant, when mixed with a decoction of quillaja and duly sterilised. The following is a modification of the formula for a saponic lubricant, published in the *New York Medical Journal*, July 22, 1893:

R $\bar{v}$ White castile soap, powdered	.	.	.	℥ i.
Water	.	.	.	fl. ℥ iiij.
Mucilage of chondrus crispus	.	.	.	fl. ℥ iiij.
Formalin (40 per cent.)	.	.	.	m x.
Thymol	.	.	.	gr. v.
Oil of thyme	.	.	.	m v.
Alcohol	.	.	.	m xv.

Mode of preparation: Heat the soap and water, and stir until a homogeneous slime is formed; then add the three ounces of mucilage (made of the strength of one ounce of chondrus crispus to the pint of water). When cool, pour in the formalin, then the thymol and oil of thyme mixed with the alcohol; stir, strain, and keep in a covered vessel until all air bubbles have vanished. The result is an opalescent, slimy substance, of the consistency of honey, which should be put up at once in two-ounce collapsible tubes, and sterilised. The chondrus crispus is substituted for the quillaja of the original formula, because of the objectionable quantity of alcohol in the tincture, and because quillaja decoction imparts to the mixture a dirty pinkish tint, whereas the chondrus crispus mucilage is colourless. The *Cetraria Islandica* was tested repeatedly, and found unsuitable. The lubricant, in its present form, is sufficiently viscid, adheres well to the surface of all instruments, does not lump, and is unirritating to mucous membranes. The same quantity of chloral hydrate, or half the quantity of chloroform, or thirty grains of

boric acid, may be used instead of the formalin, if desired, since it is intended solely as a preservative of the mucilage.

All web catheters should be kept at full length, and never coiled; otherwise the varnish will surely crack.

Web catheters should be loosely wrapped in dry, antiseptic gauze, and preserved in tightly-closed metal cases until wanted for use.

Before using a web catheter, it should be slightly warmed by friction in clean hands, and by a momentary immersion in a warm, one-per-centum carbolic-acid solution, to prevent cracking of the varnish, particularly during cold weather.

After using a web catheter, it should be well washed by forcing a stream of water through the instrument, which should then be dipped for a moment into a one-per-centum carbolic-acid solution. It should then be thoroughly dried, wrapped in antiseptic gauze, and enclosed in a metal case. Catheters may be carried in hollow walking-sticks, but never in the pockets of patients.

All web catheters are liable to harden, lose their suppleness, and be unfit for use in the course of a few years, especially when they have not been in use. On the first appearance of the hardening process, the instruments should be cast aside.

Soft India-rubber catheters should be kept at full length, never coiled, and should be wrapped in moist, antiseptic gauze, and preserved in tightly-corked glass tubes, because exposure to the air leads to rapid oxidation, which causes the instruments to become hard and brittle.

Before using a rubber catheter, it should be well washed and momentarily dipped into a one-per-centum solution of carbolic acid.

Rubber catheters become brittle in about two years, and sooner if unused and exposed to the air. But, when daily lubricated with fats, they seldom last more than three or four weeks, then swell, lengthen, and become so soft as to be liable to be torn across during withdrawal. Several inches of such deteriorated rubber thus often remain in the bladder.

When it is possible to teach a patient the use of the catheter, perhaps the safest instrument that may be placed in his hands is the "velvet-eyed" India-rubber catheter, which he must cleanse thoroughly before and after its employment.

Metallic catheters, with very few exceptions, should not be employed in attempts to relieve the distended bladder, because of their likelihood to damage the urethral canal and plough their way into the substance of the prostate, sometimes even when introduced with ordinary care. Being absolutely rigid, they cannot readily follow the abnormal incurvations of the urethra common to multiform enlargement of the prostate. The so-called prostatic catheter is particularly dangerous, for it seldom reaches the bladder without detriment to the urethra, and too often finds lodgment in the recess of some false route, which, perhaps, it has made. When a false route renders impossible the passage of ordinary instruments, the contrivances known as Hey's and Mercier's modes of catheterism are generally successful. Hey's method consists in passing, as far as, but not into, the mouth of the false route, a silk-web catheter, No. 9 or No. 10 (English), armed with a curved stylet, which is withdrawn with one hand at the same moment that the catheter is pushed toward the bladder with the other hand, when the instrument overrides the false route and enters the bladder. Mercier's method consists in the use of two catheters, which together he has named the invaginated catheter. This instrument is composed of a female and a male part. The female part is a No. 10 (English), slightly curved, thin-walled, metallic catheter, eleven inches in length, having in its concavity, half an inch from the point, an oval eye five eighths of an inch long and three sixteenths of an inch broad. From the vesical extremity of this eye is an inclined plane, lost in the opposite wall of the catheter at about one fourth of an inch from the vesical edge of the eye, serving to tilt up the point of the male part, which is a No. 6 (English), silk-web, one-eyed catheter, eighteen inches long, and fitting loosely in the lumen of the female part. In using the

invaginated catheter, the male part should first be slid into the female part down to the eye thereof. The instrument, thus armed, is passed into the urethra as far as the obstacle, engaging its point in, and with it blocking up the false route. The male part, which is then projected, soon reaches the bladder. It sometimes happens that no urine flows after the successful introduction of the male part. This is owing to closure of the eye by a clot of blood, which can be washed away with a little water injected into the catheter. The female part may then be withdrawn, and the male part left in as long as desirable. This is the reason for the great length of the male part.

Some of the other effects of neglected prostatic obstruction to urination, besides the damming up of a few ounces of urine and myxo-cystitis, are chronic retention of urine, the management of which has already been detailed (*Transactions of the Association, 1890*); increase of the vesical and prostatic muscle tissue, contracture with diminished vesical capacity (*Transactions, 1885*); interstitial cystitis, abscess in the thickened vesical walls, calculus formation, sacculation of the bladder (*Transactions, 1886*); ureteritis with dilatation, pyelitis, pyonephrosis, pericystitis, paracystitis involving the seminal vesicles and spermatic canals, and consequent abolition of the genetic function. Unclean and roughened catheters, used several times daily by careless patients, have often been the exciting cause of several of these disastrous consequences.

The frequent evacuative catheterism necessitated by prostatic obstruction causes a subacute urethritis, which demands daily irrigation of the urethra, whose mucous membrane sometimes becomes so oedematous as to render catheterism difficult and even dangerous. In such cases, the careful introduction of flexible web bougies, or of steel sounds, of increasing size to No. 15 (English), every second or third day for two or three weeks, relieves the sodden mucous membrane, restores the suppleness of the canal, and facilitates the evacuative catheterism. Another ill effect of this indis-



pensably frequent catheterism is acute orchitis, due generally to the use of unclean and fissured instruments. This occurs, in some patients, as often as every three or four months, first on one side, then on the other, seldom on both sides at the same time. After several attacks, the orchitis becomes chronic, and sometimes small purulent foci are formed in the substance of the testes. These abscesses generally open spontaneously and are rarely incised, the patients objecting until they are taught by experience that early incision is wise and proper. Finally, the spermatic canals are occluded, and the genetic function is at an end.

Chronic inflammation of the seminal vesicles and spermatic canals appears to be frequently associated with chronic inflammation and progressive enlargement of the prostate. In seventy-five per centum of the chronically enlarged prostates of elderly men dissected by the writer, there were marks of phlegmasiac action between the base of the bladder and the rectum, such as induration of the ambient connective tissue, particularly that which bounds the seminal vesicles; and these vesicles were, in general, hardened and shrivelled, and in some cases their fluid was purulent. The absence of spermatozooids and the presence of many enlarged symplexia were conspicuous in the mucus of the vesicles. The spermatic canals were abnormally hard and sometimes occluded. In a few cases, there were cystlike dilatations in the vesicles, due to the occlusion of their excretory ducts.

*Question IV. When is Operative Interference Indicated, and What Operations may be Safely Performed for Prostatic Enlargement?*—The determination of the indication of operative interference for the relief of obstruction to urination due to prostatic enlargement requires serious consideration, a judgment founded on extended clinical study of the phases and complications of the diseases of this organ, and correct notions of its patho-histology.

Operative interference is indicated when the bladder is permanently contracted and its capacity inordinately and irremediably lessened, when catheterism is extremely diffi-

cult or is followed by rigors and fever, when there are prostatic false routes, or in some cases when autocatheterism is not possible. Early operative interference is justifiable, as prophylactic of the lesions consequent upon stagnation of urine.

Operative interference is contraindicated when the upper urinary organs are damaged beyond remedy.

Operative interference may be palliative or radical.

Palliative operative interference is resorted to in the case of malignant or of tubercular disease of the prostate, in the case of permanent contracture with diminished vesical capacity, in the case of beginning involvement of the upper urinary organs, and sometimes in the case of prostatic false routes. The palliative operations are: (1) Suprapubic cystotomy; (2) the establishment of a suprapubic fistula; (3) divulsion of a false route; (4) puncture of the bladder.

1. Supra-pubic cystotomy, with maintenance of a free opening for drainage and daily irrigation, may be regarded as a palliative measure of great value in the case of malignant or of tubercular disease of the prostate, of permanent contracture with diminished vesical capacity, and in the case of beginning involvement of the upper urinary organs, particularly when catheterism has become insupportable. In these circumstances, the last few months of the sufferer's existence are rendered tolerable by the easy exit of the urine through the ample artificial orifice.

2. The establishment of a permanent supra-pubic fistula, as a palliative measure, in cases of great protrusion of the lower isthmus, in which catheterism has been extremely difficult, has proved useful in many instances, and has been successfully effected by Van Buren, Thompson, McGuire, and many other surgeons.

3. Divulsion of a false route, impeding catheterism attempted for the relief of a bladder distended with urine, has given results that warrant its adoption as a safe palliative agent. This mode of palliation, employed frequently by the writer, is as follows: When the point of the female part of

the invaginated catheter is once lodged in a prostatic false route and the male part has entered the bladder, the two parts together are pushed onward until there is no longer any resistance; the urine flowing through the female part, on withdrawal of the male part, indicates that the divulsion is complete. This operation should be done with the greatest care, or else abandoned, particularly if much force be required, for then no divulsion would be effected, and the male part would be likely to be severed by the distal edge of the eye of the female part, and perhaps remain in the bladder. As a general rule, divulsion occurs on very moderate pressure. The deep rent extends beyond the obstacle, and is similar in effect to incision of the vesical neck. Although spontaneous urination continued on an average of only two years after this procedure, and the patients were then obliged to return to autocatheterism, the false routes were cured by the operation, catheterism was thereby rendered easy, and the temporary relief was comforting.

4. Capillary puncture of the bladder, in the hypogastric region, with pneumatic aspiration of retained urine, is rarely necessary. In cases of emergency, it may be done once for the mitigation of suffering, and should not be repeated unless better means are not soon obtainable. Many observations of the ill effects of repeated punctures have led the writer to abandon the practice of puncturing the bladder in any way and for any purpose, and to regard suprapubic cystotomy as a safer measure in cases of retention of urine from prostatic obstruction when other modes of operation are not clearly indicated.

Radical operative interference is resorted to in the case of urethro-vesical bars, of outgrowths of the posterior third of the lower prostatic isthmus, and of increase of the lobes. The radical operations are: (1) Incision of urethro-vesical bars; (2) excision of urethro-vesical bars, or of the central part of the posterior third of the lower isthmus; (3) excision of pedunculated urethro-vesical growths; (4) avulsion, excision, or enucleation of the posterior third of the lower

isthmus and of portions of the lobes ; (5) enucleation of the whole prostate.

1. Incision of urethro-vesical bars, originally suggested by Guthrie, was performed by Mercier, then by Civiale, Leroy, Costello, and other physicians. The operation is now known as internal prostatotomy. Mercier devised ingenious instruments to be introduced by way of the urethra, and to divide the bar or valvule, as he called it. One of these instruments is designed to clamp tightly and to divide the compressed bar when the operator slides to and fro a long metallic stem with a cutting blade concealed in the jaws of the instrument. This last improvement in the operation is intended as a bloodless method. Mercier has sometimes found it necessary to repeat the incision several times in the course of a year or two years. The after-treatment consists in daily vesical irrigation and in dilatation and depression of the urethro-vesical orifice every third day for two weeks, then every week for two or three weeks, or until cicatrization is perfect. Complete division of the bar has given good results in great numbers of cases.

2. Excision of urethro-vesical bars or of the central part of the posterior third of the lower isthmus was first performed by Mercier, with an instrument introduced through the urethra, by which a segment of the bar or of the lower isthmus was punched out. The operation is now designated internal prostatectomy. Several modifications of this prostatectomy have been made, but they all retain the original principle of action. The writer has combined internal and external prostatectomy with advantage, and recommends performing the internal operation first, then immediately following it by opening the urethra in perinaeo for drainage. Excision should be reserved for certain cases of thick urethro-vesical bars, and of comparatively slight increase of the posterior third of the lower isthmus, with little, if any, increase of the lobes. Haemorrhage has seldom been excessive in this operation. The after-treatment is the same as in prostatotomy. (See the writer's article on "Some Points in the



Surgery of the Hypertrophied Prostate," in the Transactions of the American Surgical Association, vol. iii, 1885.)

3. Excision of a pedunculated urethro-vesical growth was performed by Amussat during suprapubic lithotomy, and this operation has since, from time to time, been resorted to by others. Some of the (perinaeal) lithotomists of the past two centuries, among whom may be named Covillard and Desault, have occasionally, by accident, seized with the forceps and torn away urethro-vesical pedunculated growths mistaken for calculi, or extracted them together with calculi. The same accidents have repeatedly occurred in the hands of modern lithotomists, who have, in other cases, incised and enucleated the growth after extracting the stone. The results were generally good, and the patients were able to empty the bladder spontaneously (Fergusson, Cadge, Williams, Bickersteth, and others).

4. Avulsion, excision, and enucleation of the intravesical protrusion of the enlarged lower isthmus, and occasionally of portions of the lobes, have been effected through suprapubic cystotomy, sometimes supplemented by perinaeal incision of the urethra. On November 11, 1887, Mr. A. F. McGill read before the Clinical Society of London, a paper bearing the title of "Suprapubic Prostatectomy," in which he gave a full account of three successful cases. The operation consisted partly in avulsion and partly in excision of the intravesical growth. The subsequent drainage was entirely suprapubic, as the perinaeum was untouched. Some of the advocates of the suprapubic method have since added the urethral incision in perinaeo, the better to control haemorrhage and also for drainage.

While the details of the operation are often varied, the fundamental idea of removing parts of the prostate from above, is uniformly carried out by the several operators, who in certain cases substitute enucleation for avulsion and excision. Drs. Atkinson, Belfield, Briddon, Browne, Bryson, Cabot, Dittel, Fuller, Keyes, McKinnon, Moullin, Raffa, Robson, Rohmer, Watson, Wyeth, and others have reported

cases of suprapubic prostatectomy with divers modifications and very satisfactory results, that have led to the undertaking of the seemingly bolder, though in reality safer, bimanual enucleation of the whole prostate, as performed by Dr. James H. Nicoll, of Glasgow, and Dr. Samuel Alexander, of New York.

Exactly how far back may date the idea of removing the entire prostate, the writer does not know. The only records he has found thus far relating to this operation are the following: It appears that total extirpation of the prostate was proposed by Kuechler (*Deutsche Klinik*, No. 50, 1866), and later was performed by Billroth, and still later by Demarquay who in 1873 reported, in the *Gazette Médicale de Paris*, two cases in which the prostate and part of the rectum were removed. In the *Arch. für klin. Chir.*, Berlin, vol. xxviii, 1882-'83, p. 578, is a paper entitled, "Tumor Prostatæ; Totale Extirpation der Prostata," by H. Leisrink. The patient, sixty-four years of age, was suffering from the effects of a large prostate. The diagnosis was malignant disease, and it was decided to extirpate the prostate in totality. The operation was performed on December 24, 1881, and the patient died of exhaustion on the thirteenth day thereafter. Extirpation of the prostate, or of any part thereof, for malignant disease is surely unjustifiable, and the only proper operative procedure in such circumstances is a palliative epicystotomy solely for drainage.

5. Enucleation of the whole prostate through the perinaeum is apparently the latest legitimate endeavour of modern surgery to eradicate the evil of obstructed urination. It seems to be the outcome of a more precise knowledge of the organ in health and disease, and of the analysis and comparison of the several operative methods already named. Experiments on the dead subject have shown that the normal prostate is with great difficulty, if at all, enucleable, that the diseased *hard* prostate is not at all enucleable, and that the diseased *soft* prostate is enucleated with comparative facil-

ity. Moreover, the dissection of enlarged prostates of elderly men has demonstrated that, while they are often dense and hard peripherally—owing to secondary phlegmasic action—they are soft and spongy interiorly—from great ectasia of the acini—and enucleable with the finger. Therefore, enucleation is applicable only to the soft prostate, which happens to be the most frequent of the morbid states of this organ in elderly men. The cases of perinaeal enucleation of the prostate so far reported are too few for generalisation, but the indications for its performance are clear. This operation, founded on a sound anatomico-chirurgical basis, is a valuable addition to the resources of the surgeon, and is worthy of extended trial, particularly in the early period of senile enlargement of the organ, before any serious implication of the bladder. It is hoped that it will not be performed indiscriminately, for, in the case of involvement of the upper urinary organs, the mortality will surely be discouraging.

The chief advantages claimed for this, over other methods of operating, are :

1. The combination of suprapubic and infrapubic section for exploration, as well as for bimanual enucleation.
2. The rapidity with which the operation is performed, the patient being under anaesthesia not more than half an hour.
3. The slight and controllable haemorrhage during and after enucleation.
4. The little injury done to the urethra and bladder.
5. The suprapubic irrigation and thorough perinaeal drainage.

Dr. Nicoll's method of operating is substantially as follows: The bladder is opened above the pubes, and its edges are stitched to the cutaneous wound. A median perinaeal incision is made to and through the prostatic capsule, without opening the urethra or neck of the bladder. The prostate is then pressed down and steadied from above, so as to be within reach of the right forefinger, with which it is shelled out through the perinaeum, all drainage being effected through

the suprapubic opening. Dr. Nicoll has published four cases successfully treated in this manner (*Lancet*, April 14, 1894).

Dr. Alexander's mode of operating is as follows: After due preparation, disinfection, and anaesthesia, the patient being supine on the operating table, the bladder is opened longitudinally above the pubes, to a sufficient extent to admit two fingers for exploration and the determination of the size of intravesical prostatic growths. This done, "the suprapubic opening is covered with gauze, the patient placed in the lithotomy posture, and a staff is passed through the urethra and held by an assistant. The membranous urethra is then opened by a median [longitudinal] perinaeal section, the floor of the urethra being thoroughly cut from just behind the bulb back to the apex of the prostate. The staff is then withdrawn and the gauze removed from the suprapubic wound. Two fingers of the left hand are then passed through the suprapubic wound, and by these the prostate is pressed downward into the perinaeum. With the forefinger of the right hand, the surgeon begins the enucleation, which is performed entirely through the perinaeal opening. The outer sheath of the prostate is broken into by the finger just beneath the mucous membrane of the prostatic urethra, and the entire prostate is shelled out from within its sheath by digital dissection. The mucous membrane of the bladder and prostatic urethra, with the underlying muscular tunic, is stripped up, but is not opened. The right and left lobes are first removed, after which, if there be a middle projecting tumor, this can be pressed downward into the perinaeal wound and enucleated in the same manner. During the enucleation, the prostate is to be drawn down into the perinaeum by forceps. After the removal of all the prostatic growths, the wound is flushed with 1 to 5,000 bichloride solution, a perinaeal tube is inserted into the bladder, and a rubber drainage tube of moderate size is placed in the bladder above the pubes. The after-treatment consists in daily washings of the bladder, fluid being injected into the suprapubic tube. All urine flows out of the perinaeal tube. The upper tube is



removed on the sixth day, and the lower tube three days later, after which the bladder is washed by catheter through the perinaeum for a few days. A full-sized sound is passed at the end of the second week, and then every five days until the perinaeal wound closes. The wounds have usually healed in the course of five weeks (*New York Medical Journal* February 8, 1896.)

Of eight enucleations performed by Dr. Alexander, two patients died from suppression of urine due to pyelonephritis, and six recovered and were able to urinate spontaneously. One of these six patients, examined by the writer six months after the operation, had only three drachms of clear residual urine in the bladder. In this case but one lobe and the lower isthmus had been removed. In all of the cases haemorrhage during the operation was inconsiderable, and the perinaeal drainage was complete. In one case there was incontinence of urine for several weeks after union of the wounds, but this finally ceased, and at last accounts the patient was able to retain his urine and to empty his bladder at normal intervals without artificial means.

When, in 1878, the writer introduced to the American medical profession Dr. Mercier's operations for the relief of prostatic obstruction, very few surgeons were willing to perform them or afterward to test the modifications proposed and successfully practised. At that time and long thereafter, these operations were condemned by leading continental and English surgeons, except by the late Mr. W. F. Teevan. Now, eighteen years after the date of the writer's first operation, prostatotomy and prostatectomy are performed with such excessive frequency, not to say recklessness, that they are in danger of falling into utter discredit, if not of being altogether abandoned. It is, therefore, hoped that persistent efforts will be made to preserve them from these besetting dangers by those who know so well the real value and special indication of each of these procedures, and employ it with due discernment.

Time and space forbid even the enumeration of the medi-

nal and surgical contrivances that, during the past three decades, have been proposed, tried, and found wanting in efficacy, or positively mischievous, for the "cure" of prostatic enlargement. Each failure has been quickly succeeded by a "new cure," which, however, has proved as pernicious or as preposterous as its predecessor, but, fortunately, quite as ephemeral. The fact that enlargement of the prostate is not a single morbid or morbid entity, is more than suggestive of there being no easy or exclusive way to the proper management of this ailment. Therefore, no treatment can be rational or successful which is not based upon accurate diagnosis, and which is not adapted to the particular condition of the diseased organ and to its effects upon the organism. In stating his appraisal of the several modern therapeutic procedures pertaining to prostatic enlargement, the writer has not deemed it necessary to specify those that he regards as useless or harmful.

## THE RADICAL TREATMENT OF PROSTATIC ENLARGEMENT, BY PROSTATECTOMY.

By SAMUEL ALEXANDER, M. D., of New York County.

*October 13, 1896.*

Prostatic enlargement is purely a local affection. Its consequences are due, primarily, to the obstruction which it offers to the outflow of urine. Treatment becomes necessary when it begins to interfere with the function of the bladder. The prostate may attain a very considerable increase in size without causing any symptoms of note, and it is certain that in at least one half of all those cases in which the prostate is enlarged, no treatment is required. In these cases the obstruction is so slight, and the muscular power of the bladder is so good, that the patient remains unconscious of the enlargement. When, however, the enlargement begins to interfere with the functions of the bladder, and when there is sufficient obstruction to prevent this viscus from emptying itself, and to weaken its expulsive power, treatment becomes a necessity. The more promptly such a condition is recognised, and treatment begun, the better for the patient's future comfort and safety. Delay is dangerous. The bladder and kidneys are threatened and, unless the obstruction is relieved promptly, these organs must inevitably suffer.

The choice of treatment lies between the habitual use of a catheter for the remainder of the patient's life, or the complete removal of the obstruction, and when neither of these is possible, the establishment and maintenance of an artificial channel through which the urine may pass.

It should be stated at the outset that, in the ordinary cases of prostatic enlargement of however long standing, in which the obstruction is not great and the power of the bladder is

fair, in which there is not an excessive amount of residual urine and where catheterism is easy and painless, and in which cystitis, if it exists, is not severe and can be controlled by aseptic washings and regular catheterism, operative treatment is not indicated.

The value of regular, careful, aseptic catheterism as a palliative measure, in the treatment of many cases of prostatic enlargement, cannot be too highly estimated. There are many individuals who have prostatic enlargement, of those who live in a fair degree of comfort for many years—often for the rest of their lives—by the more or less frequent passing of a catheter, and by following strictly a proper course of treatment. There are many other cases, however, who either can not, or will not, use the catheter, and still other cases in which, in spite of all precautions, catheterism gives little or no relief. In these patients the symptoms continue, more or less rapidly, to grow worse. The expulsive power of the bladder grows less and less, the quantity of residual urine gradually increases, the irritability of the bladder and prostatic urethra also increases, the introduction of the catheter becomes more and more difficult, cystitis of a severe type intervenes, and the condition of the patient becomes most pitiable. But the value of catheterism in the treatment of prostatic enlargement depends largely upon the care with which its details are carried out. Catheterism and vesical washing, when properly done, are valuable means of treatment; unskilful and uncleanly catheterism is the active cause of many of the unfortunate complications of enlarged prostate.

There are certain patients who have a peculiar immunity from infection, who may disregard all established rules of cleanliness, and who may continue for long periods to use a dirty catheter without infecting the bladder. These cases are exceptional. There are also patients whose bladders become easily infected at the beginning of catheterism, but who may, later on, acquire a certain degree of immunity, so that some of the aseptic precautions which were first neces-



sary to prevent cystitis may be given up. But, in most prostatics, the bladder is liable to become infected at any time, from causes seemingly slight, so that it is never safe to neglect the precautions necessary to prevent this accident.

It follows, therefore, that if catheterism is to be of service, the patient should be of sufficient intelligence to understand the necessity for the precaution taken to prevent infection, should have sufficient manual dexterity to properly use the catheter, and should be so situated that the necessary precautions in using the catheter can be thoroughly and invariably carried out.

But there are many cases in which, even under the most favourable circumstances, catheterism fails to give relief, owing to the character and conformation of the enlarged prostate, and the obstruction which it offers to micturition. In these cases catheterism may seem to act admirably for a time; the symptoms are relieved, and all goes well, but sooner or later the disease becomes rebellious, and palliative treatment is, undoubtedly, a failure. This should be early recognised, and before it is too late radical treatment should be employed.

The conditions that demand operative treatment for prostatic enlargement may be summarised as follows:

1. When there is complete, or almost complete, retention of urine, due to prostatic outgrowths about the internal urethral orifice, or projecting into the prostatic urethra, making the patient entirely dependent, at all times, upon the use of his catheter. The consequences cannot be doubtful in such cases, and operation affords the only means of averting fatal disaster.

2. When there is marked and continuous vesical irritability, due to intravesical outgrowths, which cannot be allayed by the most careful catheterism and washing of the bladder. These cases usually suffer from frequent attacks of hæmaturia; and cystitis, when it develops, is usually severe.

3. When, in spite of careful catheterism, the amount of residual urine is steadily and surely increasing, showing a gradual failure of expulsive force in the bladder.

4. When catheterism is becoming more and more difficult, in spite of all precaution, and when it is frequently followed by haemorrhages.

5. When catheterism, in spite of all precaution, is frequently followed by attacks of cystitis.

6. In cases of long-continued vesical inflammation which do not yield to treatment.

7. In cases where the patients can not or will not use a catheter and take the necessary aseptic precautions to make its use of value.

In a word, it may be stated that catheterism, with all that the term implies in the treatment of prostatic enlargement, should be employed in all cases until it fails to give relief, but when it fails, and the integrity of the bladder and kidneys is threatened, we should resort to operative treatment before these organs have become hopelessly damaged.

The question is then presented, What operations may be performed for the permanent cure of prostatic enlargement?

In the first place, I believe that any operation designed for the permanent relief of prostatic enlargement should fulfil the following conditions:

1. The obstruction should be thoroughly and immediately removed.

2. As little damage should be done to the mucous membrane of the bladder and prostatic urethra as possible.

3. Efficient drainage of the bladder should be established.

*In order that the relief shall be permanent, it is necessary not only to remove the portions of the prostate which are causing obstruction at the time of operation, but also, all those portions which, if they be left, may cause obstruction by their progressive enlargement.* If this proposition be true, then any operation that does not take away all portions of the prostate that are enlarged, cannot be regarded as a radical operation. This, I believe, to be a sound position, in spite of the opinion of those who claim that only portions of the prostate should be removed, and that the danger of the operation depends largely upon the amount of tissue removed.

Many of the failures to give permanent relief by prostatectomy operations, and the relapses which have occurred after the removal of portions of the enlarged prostate are, without doubt, due to the removal of an insufficient amount of the enlarged gland.

The only prostatectomy operations which fulfil these conditions are those devised by McGill, Belfield, Nicoll, and Alexander. McGill's operation is that which is usually performed at the present day. In this operation, the bladder is opened above the pubes. The mucous membrane covering the projecting portions of the prostate, is cut through by scissors, and the obstructing portions are removed, partly by enucleation with the finger, partly by cutting with forceps. E. Fuller, of this city, has modified the technique of this operation by making a comparatively small opening in the mucous membrane, and enucleating through this the prostatic growths with the finger. McGill drains the bladder through the suprapubic opening. Fuller, following Keyes and Belfield, opens the membranous portion of the urethra and drains through the perinaeum.

In cases of prostatic enlargement in which the lateral lobes are principally enlarged, it is sometimes extremely difficult to remove these by the suprapubic incision, and it was mainly to meet these cases that Belfield first employed the combined perinaeal and suprapubic incision. By passing the finger into the prostatic urethra through the opening in the perinaeum, he was able to bring the lateral lobes within reach of the finger passed into the bladder through the suprapubic opening.

Although these operations, in the hands of skilful surgeons, have given gratifying results, and, as experience is gained, the death-rate will, undoubtedly, be lowered, there are certain objections to the suprapubic method.

The chief of these are,—

1. That the mucous membrane of the bladder and that of the prostatic urethra is cut through and more or less torn and bruised.

2. That the haemorrhage is frequently severe, and requires packing of the wound to control it.

3. A still more vital objection to these methods is, that after the prostatic obstruction is removed a cavity is left, which is freely accessible to the urine. In this the urine collects, and as this is often foul, in the cases operated upon, there is great danger of septic infection. Nor can this cavity, from which the prostate has been removed, be efficiently drained. Suprapubic drainage alone is entirely efficient, and even where perinaeal drainage is employed the tube, in order to properly drain the bladder, must be placed above the level of this cavity.

To overcome these objections, Nicoll's operation and my own operation were devised. Since the publication of our respective methods, in 1894, several writers have confounded the two operations, which are essentially different in their technique. In order to correct this misapprehension, I shall give a description of my own method, and then call attention to the points of difference between it and that devised by Dr. Nicoll.

*Alexander's Method.*—The patient is prepared, when possible, by giving a cathartic the night before the operation, and by emptying the lower bowel by a large enema the following morning.

The bladder is washed immediately before the operation with a solution of nitrate of silver (1 to 6,000). The patient being anaesthetised, the bladder is emptied by the catheter, and is then distended with borax solution, from eight to ten ounces being sufficient in most cases to bring the organ well above the pubes. I have discarded the use of a rectal bag. The bladder is then exposed by vertical incision between the recti muscles, and two retraction sutures are introduced through its wall. Between these an opening is made into the bladder large enough to allow the operator to insert two fingers. The cavity of the bladder and the projecting portions of the prostate can now be examined thoroughly.

The suprapubic opening is then covered with gauze, and



the patient placed in the lithotomy posture. A broad, median-grooved staff is passed into the bladder through the urethra and held by an assistant. The membranous urethra is then opened by a median-perinaeal section, the floor of the urethra being thoroughly cut from just behind the bulb back to the apex of the prostate. This must be done thoroughly. The staff is then withdrawn, and the gauze removed from the suprapubic wound.

The surgeon now washes and disinfects his hands. Two fingers of the left hand are then passed into the bladder through the suprapubic wound, and by these the prostate is pressed downward into the perinaeum. With the forefinger of the right hand the surgeon begins the enucleation, which is performed entirely through the perinaeal opening.

The fibrous sheath of the prostate, covering its posterior and inferior surface, is broken into by the finger, and the capsule entered; the entire prostate is shelled out from within its sheath by digital dissection. The inferior and posterior surface of the prostate should be first separated from the capsule. The mucous membrane of the bladder and prostatic urethra covering the enlargement with the underlying muscular tissue, is stripped up from the part to be removed, but is not opened.

The lateral lobes are first removed, after which, if there is a middle enlargement or a projecting tumor or tumors, these can be pressed downward into the perinaeal wound and enucleated in the same manner. During the enucleation the prostate can be drawn down into the perinaeum by forceps, and for this purpose I use an ordinary ring sponge holder with a strong lock in the handle.

After the removal of all the prostatic growths, the lower wound is flushed with 1 to 5,000 bichloride of mercury solution, a perinaeal tube is inserted into the bladder, and a rubber drainage-tube of moderate size is placed in the bladder above the pubes. The retraction sutures are removed, and the bladder allowed to drop back behind the pubes. The upper part of the suprapubic wound is then closed by sutures,

and a dressing of gauze pads applied which is perforated to permit the drainage-tubes to pass.

The after-treatment consists in daily washings of the bladder, the fluid being injected into the suprapubic tube. All urine flows out of the perinaeal tube.

The upper tube is removed on the fourth day, and the lower tube three days later, after which the bladder is washed by catheter through the perinaeum for a few days.

A full-sized sound is passed at the end of the second week, and then every five days until the perinaeal opening closes. Both wounds have usually healed in the course of five weeks.

If this description be compared with that of Dr. Nicoll's method, published in the *Lancet*, April 14, 1894, it will be seen that the two methods are essentially different. In both, the combined suprapubic and perinaeal incision is made, and the prostate is enucleated through the perinaeal wound, the suprapubic incision being used for the purpose of pressing the prostate into the perinaeum with the fingers, and thus facilitate its removal.

In both operations, neither the mucous membrane of the bladder nor that of the prostatic urethra is injured, but Dr. Nicoll exposes the prostate by a rather elaborate dissection, stripping the rectum away from its under surface, while, in my operation, a simple perinaeal section is made.

Dr. Nicoll does not open the urethra, but drains the bladder by means of a catheter passed through the urethra, while I open the membranous portion of the urethra for the purpose of securing vesical drainage through the perinaeal wound.

For the purposes of enucleation Dr. Nicoll recommends, in difficult cases, the use of a blunt periosteal elevator and specially designed scissors and cutting forceps.<sup>1</sup>

In the operations which I have done the enucleation has been performed entirely by the finger. Dr. Nicoll packs the perinaeal wound and cavity, left after the removal of the prostate, with iodoform gauze. I simply allow it to drain

<sup>1</sup> Letter in *Journal of Cutaneous and Genito-Urinary Diseases*, August, 1895.

into the perinaeal wound, and keep it sweet and clean by frequent flushings with a mild antiseptic solution.

Dr. Nicoll's operation is certainly to be commended, and has been, I believe, eminently satisfactory in his hands. I have not personally performed it upon a living subject, but upon the cadaver it requires a much longer time than does my own operation. It has also the disadvantage that the bladder must be drained by a catheter tied in the urethra, a proceeding which is badly borne by most cases, and in many becomes intolerable.

Dr. Nicoll states that in the cases operated upon by his method, up to the publication of his paper, in January, 1894, he had not encountered a median projection of the prostate, the obstruction in his cases being due entirely to the enlargement of the lateral lobes. He recommends that when a median enlargement is present, it should be left at the time of the operation, and removed some days later through the suprapubic opening. I can see no reason for this course, for it seems as easy to remove such a projection through the perinaeum at the time of the original operation, as to remove the lateral lobes. To do as Dr. Nicoll suggests, is practically to perform McGill's operation as a secondary measure.

The operation which I have described above I first performed in January, 1894. Since then, I have operated by this method upon eight cases, with two deaths.

The result in the six successful cases was complete restoration of voluntary micturition. The ability to empty the bladder completely was regained by all but one patient, and in this case the amount of residual urine is now only six drachms. I have removed by this method both lateral lobes entire, the lateral lobes and a median projecting mass, a lateral and median enlargement, the lateral lobes and two large projecting intravesical growths. These masses have been taken out entire. In none of these cases was the mucous membrane of the bladder or prostatic urethra cut or torn. The patients were usually confined to bed for three weeks, and both suprapubic and perinaeal wounds were closed

in all the cases at the end of five weeks after operation. In one case where I removed four very large masses, the patient had partial incontinence for several weeks after the wounds had closed, but he subsequently gained good control over the sphincters. In none of these cases was the haemorrhage troublesome.

In one of these cases the bladder contained six calculi, each about the size of a chestnut. In another, about fifty small prostatic calculi were removed together with the prostate. In all the cases the expulsive power of the bladder was greatly lessened at the time of operation; in most of the cases there was complete vesical atony. In one of the cases the bladder wall was greatly thickened and the mucous surface was markedly trabeculated. In all the cases but one the entire prostate was shelled out from its capsule. In the first operation performed by this method the prostate was enucleated piece-meal; in all of the others it was taken out in large masses.

The advantages I have claimed for this method of operation are:

1. The entire prostate is thoroughly and immediately removed by enucleation.
2. The mucous membrane of the bladder and prostatic urethra is uninjured, and the danger from septic absorption is thereby lessened.
3. Haemorrhage is reduced to a minimum.
4. The most efficient and thorough drainage is secured.
5. The time required by practised hands to perform the operation is comparatively short.

#### REPORT OF CASES.

The fatal cases:

CASE I.—L., fifty-eight years. Patient had been a hard drinker. History of prostatic obstruction for several years, frequent attacks of retention.

On admission to Bellevue hospital, patient could pass a very little urine voluntarily. He had great frequency, and some overflow. The urine was ammoniacal, loaded with pus and blood, the





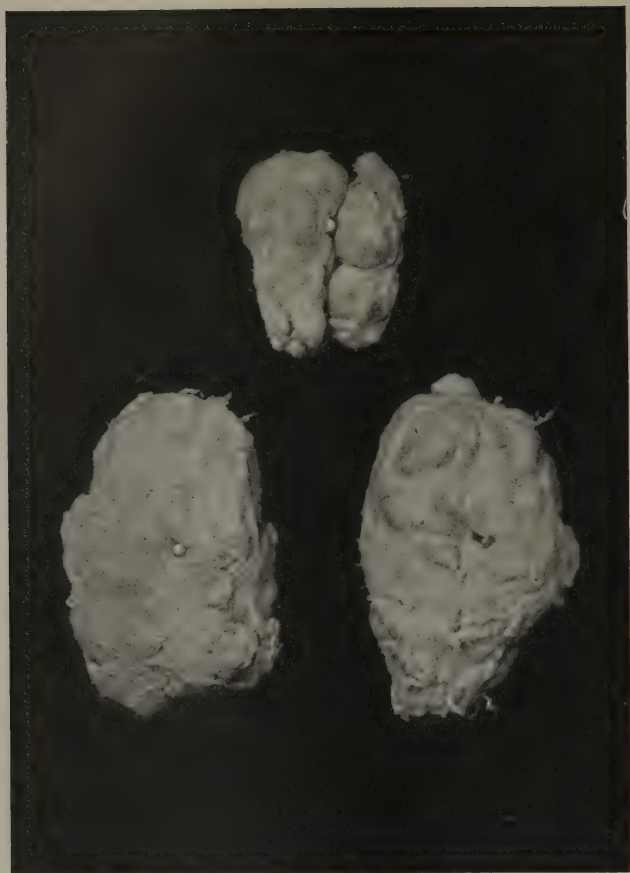


FIG. I.—Both lateral and median enlargements removed by the author's method.

specific gravity 1,018, twenty-five per cent. by bulk of albumen; hyalin, and a few granular casts. He had a mitral regurgitant murmur, and a general atheromatous condition of the blood vessels. A catheter was passed, and bladder emptied and washed. Catheterism was difficult, and produced haemorrhage.

Operation, September 30, 1895. Two large lateral lobes and a median enlargement were removed without much difficulty. Patient appeared to do well until October 2, when he developed a pneumonia, urine became scanty, perinaeal wound sloughed, and a small fistula formed between the rectal and perinaeal wound. He died two days later. There was entire suppression of urine during the last twelve hours.

This case was operated on only as a last resort, and his death was not a surprise. It is an example of those cases in which operative measures are employed too late. I should prefer, with my present experience, to use vesical drainage in a similar case, rather than prostatectomy.

CASE II.—M., sixty-four. Patient a hard drinker, had several attacks of renal colic previous to his fortieth year. One year after his last attack, he passed three calculi by the urethra. History of frequent micturition for several years past. Five or six months prior to admission, he began to have the acute symptoms for which he now seeks relief. He has burning pain, especially severe after micturition, great frequency and urgency, which are increased by jolting. Stream of urine is feeble, and is suddenly arrested. He has never passed blood.

Urine, specific gravity, 1,010, small amount of albumen, and large amount of pus. A microscopical examination shows many large blood cells, no casts. Rectal and urethral examination shows a moderate enlargement of both lateral lobes, and a projecting median portion. The amount of residual urine is about five ounces. Examination of the bladder by searcher shows a number of calculi.

Suprapubic cystotomy performed April 20, 1895, under ether anesthesia. Six calculi, each about the size of a chestnut, were removed.

Digital examination of the bladder showed that the prostatic enlargement formed a thick ring or collar about the vesical orifice, making thereby a very deep *bas-fond* behind the prostate. A perinaeal incision was therefore made, and the entire prostate removed through the lower opening. (Fig. I.)

Patient rallied well from the operation, but upon the second day developed uraemic symptoms, with almost complete suppression, and died April 24, four days after operation.

The autopsy showed a general artero-sclerosis, valves of the heart thickened, calcareous deposits in coronary arteries, lungs oedematous. Emphysema well marked, moderate bronchitis. Liver friable, weight five pounds. A single renal calculus in pelvis of left kidney. Kidney showed chronic parenchymatous nephritis. No evidence of suppuration about the operative wounds. The mucous membrane of the bladder and prostatic urethra intact.

### Successful cases:

CASE I.—Prostatic calculi and enlarged prostate.

C. B., age fifty-three, admitted to Bellevue hospital, January, 1894. Symptoms of prostatic obstruction for over one year. Great frequency day and night. Intense tenesmus at end of act of micturition. Frequent haematuria. Passes about one half an ounce at each act of micturition. Has never used catheter regularly.

Rectal and urethral examination shows prostate rather irregular in outline, right lobe larger than the left, and small median projection. Pressure upon the prostate causes great pain, and reveals the presence of calculi in its substance, which can be rubbed together. Searcher shows presence of calculi projecting into the prostatic urethra. Residual urine about six ounces. Expulsive force of bladder fairly good. Urine shows chronic cystitis; kidneys are sound. Operation January 22, 1894, ether anaesthesia. About fifty calculi and the entire prostate were removed. This being my first operation by this method, prostate was shelled out piecemeal.

The perinaeal tube was removed on the fifth day, as the patient complained of pain, and it was re-introduced every two hours for the next twenty-four hours. Suprapubic tube removed on the sixth day. Both wounds healed kindly. Patient passed all his urine by urethra at end of fourth week. He was kept under observation until March 22, 1894, when he was discharged, cured. He could then empty his bladder completely, and his urethra admitted easily a No. 32 F. sound. Patient reported himself well in April, 1896.

CASE II.—E. R. B., age fifty-six. Symptoms of prostatic obstruction for past six years, and micturition is difficult. During the past two months, from time to time has suffered from overflow. Had an attack of complete retention two years ago, after exposure





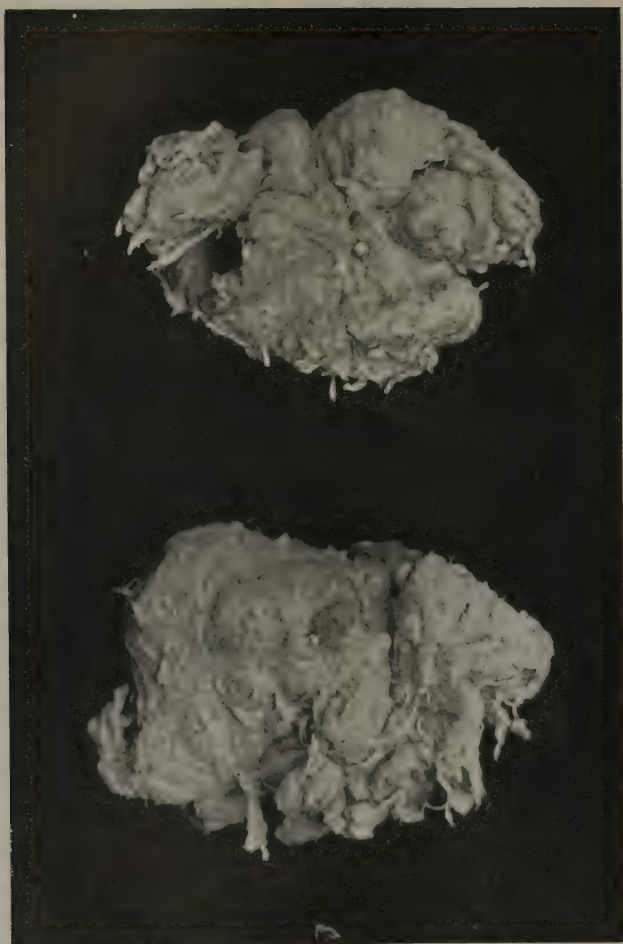


FIG. II.—Double lateral enlargements removed by the author's method.

to cold. This was relieved by catheter, and since then has passed urine with greater difficulty, about every hour.

Six months ago had a second attack of retention, relieved by catheter, followed by severe cystitis. Has used a catheter since then every four hours, with little relief. Patient, when first seen by me, had complete retention, his third attack. Prostate was uniformly enlarged in the lateral lobes, and was rather tender. Coudé catheter passed with some difficulty, sixteen ounces of urine withdrawn. For two weeks patient was regularly catheterised, and bladder treated. The residual urine, after voluntary micturition was restored, was nearly eight ounces.

He absolutely refused to follow out directions as to catheterism and washing, and demanded an operation. This was performed by me early in February, 1894. Tubes removed on the fourth and sixth days respectively. Wounds healed kindly, and were completely closed by the fifth week.

Patient left for his home in another state, and has since reported that his urine remains clear, and that he empties his bladder completely. In this case, both lateral lobes were removed entire.

CASE III.—J. F., sixty-six years. Prostatic symptoms date back twelve years, when he began to have frequency. He has used a catheter every four hours for the past six years, and has washed his bladder once daily with various aseptic solutions.

Six months ago, he had complete retention, and since then has suffered with severe cystitis. The intervals of catheterism have been becoming shorter for the past two months. He is now obliged to pass his catheter every two hours, night and day. Bladder has little expulsive force. He has eight ounces of residual urine. Little expulsive force in the bladder.

Rectal examination shows a smooth, rather soft enlargement of both lateral lobes. Urine, specific gravity, 1,021, alkaline, ammoniacal; thick, purulent sediment, trace of albumen; no sugar; no casts. As the patient's condition was growing very much worse, an operation was proposed and accepted. Operation performed in October, 1895. Two large lateral masses removed without great difficulty. (Fig. II.) The bladder was somewhat thickened. Drainage tubes removed on the sixth and tenth days respectively. Patient made an uninterrupted recovery; passed all his urine per urethra on the thirtieth day.

CASE IV.—This and the next case have been previously reported. T. O'C., aged sixty years. Ten years ago he had a sudden attack

of retention, which was relieved by catheterism ; he was admitted to one of the city hospitals, and was there taught to use a catheter, which he continued to use for several years. He, however, gave up its use, owing to his reduced circumstances, after which he continued to pass his water with great frequency.

Three months ago he had a sudden attack of retention ; this was also relieved by catheter. He was admitted during my service at Bellevue on February 11, 1895, with retention for the third time, and considerable vesical distention and overflow. Catheterised, and thirty-two ounces of residual urine drawn. Rectal examination shows an enlargement of the prostate, the right and median portions being affected. The catheterism is not difficult when a Mercier instrument is used. A soft catheter cannot be introduced. The bladder has no expulsive force.

He was catheterised four times daily, and the bladder washed once a day until March 17. At the end of this time, the patient could pass about half an ounce of urine voluntarily, there being about ten ounces of residual urine. It was found impossible to teach him to use a catheter and wash his bladder, and as he had no facilities for performing this for himself out of the hospital, an operation was offered and accepted. Operation March 18. Ether anaesthesia. A large right lobe and smaller median portion were removed through the perinaeal opening after enucleation without much difficulty. (Fig. III.) Bleeding slight. The bladder was trabeculated and thickened. Suprapubic tube removed on sixth day. Perinaeal tube removed on thirteenth day. No. 32 sound passed. Suprapubic opening nearly closed. No urine escapes.

April 24th, perinaeal wound closed. All urine passed by urethra. At the present time he makes water every four or five hours, and empties his bladder except six drachms of residual urine.

CASE V.—James D., aged sixty-two years ; weight, two hundred and thirty-five pounds. Admitted March 26, 1895. Patient came in with a history of difficulty in passing water, and great frequency of several years' duration, with a condition of acute retention of urine of twelve hours' duration. Catheterism was attempted by the house surgeon, but he was unable to pass any instrument into the bladder.

After some difficulty I succeeded in passing a No. 6 E stylet catheter, bent to an exaggerated curve, the stylet being withdrawn gradually as the catheter was introduced, so as to cause its point to override the obstruction presented by the middle portion of the



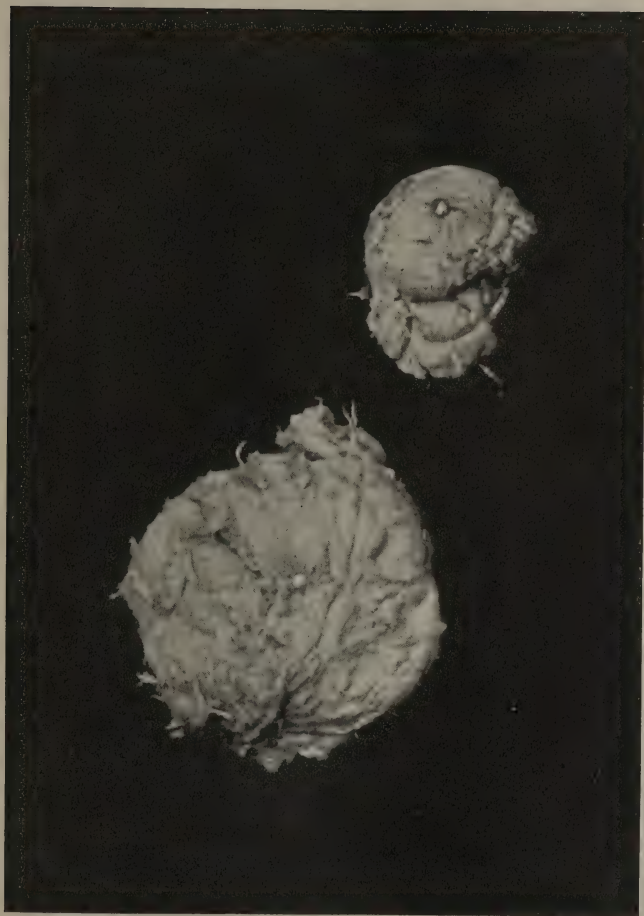


FIG. III.—Median and lateral enlargement removed by the author's method.



prostate. Thirty-two ounces of ammoniacal bloody urine were withdrawn. Rectal examination showed an enormous prostatic tumor encroaching upon the cavity of the bowel, the upper margin of which was well above the reach of the finger. The patient's bladder was washed, and a catheter was passed by the above-described method every six hours. The urine continued to be fetid and to contain blood.

On April 11th, the house surgeon again failed to make the instrument enter the bladder, and I succeeded only after a long trial. I decided to open the urethra through the perinaeum, as a preliminary operation to prostatectomy, for the purpose of draining the bladder and disinfecting its cavity. I, therefore, under ether anaesthesia, performed a perinaeal section, and attempted to dilate with my finger the prostatic urethra. I could not, however, pass my finger into the bladder, owing to the length of the prostatic portion of the urethra, and the very great resistance offered by the prostatic growths.

Accordingly, I simply introduced through the perinaeum into the bladder a No. 26 F. tube, and, having washed the bladder, secured this in place by tapes. This drainage I continued for a week; the loss of blood ceased, the urine became clearer, and the patient's condition improved. At the end of the week, the perinaeal tube was taken out, and I then found no great difficulty in introducing, through the urethra, a Mercier catheter. Knowing, however, from the size of the prostate, that this improved condition would be only temporary, I decided to remove the prostate, which I did on April 11, 1895. The operation, owing to the depth of the perinaeum, was difficult to perform.

I succeeded, however, in removing the entire enlargement—two large lateral lobes, and two large median tumors—without injury to the bladder or prostatic urethra.

The tubes were removed on the tenth and sixteenth days respectively. The wounds healed slowly, but both were entirely healed at the end of the fifth week. The patient at first had almost complete incontinence, but now has control over his sphincter and empties his bladder completely.

CASE VI.—O. D. H., sixty-five years. Symptoms of prostatic enlargement for fifteen years. Has had retention, with overflow, for past two years, and has had to depend entirely upon his catheter for relief. His urethra is extremely sensitive, and catheterism is always followed by haemorrhage. He is obliged to pass

the catheter every two hours, night and day, and the intervals are rapidly becoming shorter. He has a symmetrical enlargement of both lateral lobes, which project far up into the bladder.

He was put to bed, and an attempt made for a week to institute more perfect aseptic catheterism, but, as his symptoms showed no signs of improvement, I proposed an operation, which was accepted, and this was performed in September, 1895. Two large, lateral lobes were removed without difficulty. The drainage-tubes were removed on the fourth and sixth days respectively. The patient entirely emptied his bladder on the thirty-fifth day. He returned to his home, and I have not heard from him since his departure.

Prostatectomy, when it is performed before the kidneys have become seriously diseased, does not, I believe, involve much more risk than a suprapubic cystotomy for the relief of other conditions. The perinaeal incision does not increase the risk.

In advanced cases of prostatic disease, however, when the bladder is the seat of severe cystitis, when the kidneys are seriously crippled, especially when pyelonephritis is present, the dangers of prostatectomy are greatly increased, as the principal cause of death after prostatectomy is failure of the kidneys to perform their function.

In these cases, I believe that it is better surgery to open the membranous urethra, as a preliminary measure, and to drain the bladder by a large catheter or tube introduced through the perinaeum; and later, when the conditions are more favourable, to do a prostatectomy. This course was pursued with good results in one of the cases which I have reported.

The value of vesical drainage in advanced cases of prostatic enlargement is very great, and in these cases, unless the object of the operation be to make a permanent fistula, I prefer perinaeal to suprapubic drainage.

In many cases in which catheterism has become difficult, especially if due to outgrowths from the lateral lobes into the prostatic urethra, dilatation of the latter by introducing the finger through a perinaeal opening and drainage of the bladder, makes the introduction of a catheter comparatively easy



for a time. This effect, however, is only temporary, and sooner or later these cases relapse unless the prostate is removed. I believe that prostatectomy should not be performed during a period of acute congestion. It is better to wait until the congestion has subsided as a result of careful catheterism, or, if this fails, to drain the bladder through the perinaeum for a few days, before deciding whether a more radical operation will be required.

It may be stated, further, that an operation upon a highly congested prostate is certain to be accompanied by much more severe haemorrhage.

The question of relapse after prostatectomy is one deserving some consideration. If the operation has been thoroughly and skilfully performed, and the entire prostate has been removed, it can be positively stated that no obstruction can occur in the future. If the prostate is only partially removed, return of the obstruction by progressive enlargement of the portion remaining is possible, and such cases have been reported.

Another question which requires careful consideration is, To what extent will the bladder regain its power after prostatectomy? This cannot be positively answered in all cases. Cases have been reported in which the operation was performed after the bladder muscles had undergone structural change as the result of severe and prolonged cystitis and obstruction, and in these voluntary micturition was not restored by prostatectomy.

My own experience has been that, in all cases in which structural changes of a severe type have not occurred in the vesical walls, even if the bladder is completely atonic, the power of voluntary micturition can be expected in the great majority of cases, if the entire obstruction be removed.

Even should the bladder fail in some cases to recover its power, and the use of a catheter be necessary after prostatectomy, it will be found that the difficulties and dangers of catheterism are far less than before the operation.

The mortality after prostatectomy is still high, about

eighteen or twenty per cent. for all operators. It is gradually becoming less, as the indications for the operation are better understood. The death-rate of individual operators will undoubtedly continue to grow less as they become more expert in performing the operation, and the cases of relapse and failure will be much fewer as more experience is gained.

In concluding, I desire to state that prostatectomy promises to be a more satisfactory method of radical treatment than any other yet proposed, provided that the operation is performed before the kidneys have become hopelessly diseased.

# WHAT ARE THE EFFECTS OF PROSTATIC ENLARGEMENT, AND HOW MAY THEY BE COUNTERACTED?

By W. G. BROWNSON, M. D., of Noroton Heights, Conn.

*October 13, 1896.*

The subject of prostatic enlargement has been so fully and exhaustively treated in the very able paper to which we have listened, that but little can be added. Rather to confirm the statements therein contained than to add anything thereto, I may state briefly my experience with quite a numerous class among the veterans in the Connecticut Soldiers' Home.

The conditions confronting the physician who has the care and treatment of the veteran soldiers, differ materially from those which obtain in general practice. In the ordinary field of medical work he seeks and expects a cure in the larger percentage of his cases; among the crippled and chronic invalids of the homes he moves in a different atmosphere, and his anxious study is how he may best alleviate distressing symptoms and prolong life.

In my observation of cases here, I find none that appeal to me more strongly for relief and comfort than those urinary cases which properly come under the head of retention due to enlarged prostate, and the resulting chronic cystitis; upon no countenances are depicted more certain evidences of deep anxiety and apprehension. In obstruction of the bowels, action for a time may safely be delayed. In Bright's disease, consumption, or even in cancer, they may at times be hopeful, even cheerful. Not so when the bladder is distended by retention. The victim is helpless, the doctor is his only hope, and relief can not be delayed.

Fortunately, with the various resources at our command, we can promptly relieve, generally by some form of catheter,

or failing in this, by aspiration. In either case we find generally that we have started upon a long and rather rough road for our patient. Even if fortunate enough to succeed by catheterism, in a considerable percentage of those past sixty-five years of age, we have begun a work that must be continued very likely to the close of life. In most cases we shall find that the final retention has been preceded by a term of partial retention, frequent, difficult, and painful urination, and consequent cystitis. Since this condition indicates plainly a mechanical obstruction to the free out-flow of urine, we find but little satisfaction from ordinary medication, and less from the vaunted specifics and proprietary preparations so constantly and persistently thrust upon our notice in the penny envelopes that swell our morning mail.

In the class under consideration, and which for the sake of brevity I shall denominate bladder cases, the prominent symptoms have many points of similarity, whether the affection be due to calculus, prostatic enlargement, cystitis, or stricture. At least partial retention, with resultant atony of bladder, and a highly irritable condition of bladder and urethra, frequent and unsatisfying attempts at micturition, ammoniacal decomposition of the residual urine, are the common and natural outgrowths of these diseased conditions. In many cases, especially if the retention be considerable in quantity, there is frequently soiling of the clothing by involuntary dribbling of urine. The offensive and diseased secretion acts upon the urethra very much as the secretion from an inflamed eye upon the cheek. The stinging pain at the meatus, the straining for relief, the disturbed sleep from frequent calls during the night, produce their natural reflex action upon the nervous system and digestion, until the entire organism becomes seriously deranged and impaired. This, in brief, is the history, and it must be admitted that the condition of such patients (and they number many in our homes) is sad in the extreme.

The best method of dealing with this large class of unfor-



tunates is a matter of no small importance. The practice which has been carried out in this home for several years, and which I purpose to continue, may be of interest to others. While I shall lay no claim to originality in the management of such cases, I shall lay some stress upon the wisdom and benefits of persistence in well-doing.

The first step, of course, being to empty the bladder, the next is to cleanse it and to keep it as clean as possible. As the teeth, mouth, stomach, become foul, washing and cleansing become not only imperative, but the keeping of these organs clean is quite as necessary.

The introduction of the catheter (and I always use the soft rubber when it can be passed) should be made with the most exquisite gentleness. It should be remembered that the urethra, in many of these cases, is extremely sensitive from the long-continued irritation of abnormal urine, and the withdrawal, as well as the introduction, of the instrument, should be done with deliberation and care. I have often been pained to witness some would-be experts display their agility in traversing this sensitive canal. Softly, carefully, patiently, let him travel who makes a journey here. Often from mere spasmodic resistance the introduction is delayed. A steady, mild, and long-continued pressure will generally overcome this. After waiting for the urine and its cloudy sediment to pass, I inject from three to five ounces of warm water, to which are added equal parts of carbolic acid and glycerine, rendering the strength of the solution suited to the individual case—1 to 200, 1 to 500 or 1,000, as seems indicated. This is to be injected slowly, by inserting the small tube of a fountain syringe into the catheter. The double catheter used by some for this purpose produces far greater irritation and possesses no advantages. This irrigation is to be kept up until the water voided is entirely clear. In some cases a half dozen or more injections are used, the patient in all cases lying upon a reclining chair. In some cases other solutions are used, acid or alkaline, and often an ounce or a little more is finally injected and left in the blad-

der. This practice is kept up in aggravated cases, sometimes two or three times a day—generally once a day for months and years, if necessary. I must admit that some of the cases seem for a time to be made worse instead of better, by this treatment. But ultimately every case upon which this method has been practised has improved, and some of them to a remarkable degree.

One man of sixty years of age, after several weeks of treatment daily, or twice a day, in hospital, has been transferred to barracks, requiring no further treatment for the present. We shall, without much doubt, see him later. Two men past seventy-five years of age, who have been treated three and four years, respectively, are now enjoying comfortable health, each attending himself by auto-catheterism. Several are now in hospital, being treated in this manner daily. The urethra and bladder, which are at first so keenly sensitive that the patient dreads the operation, soon become tolerant, so that the patient is ready and anxious for the service. The introduction of the instrument constantly becomes easier,—the passage is kept open, dread and apprehension of closure are removed, and life becomes more enjoyable. Surely, to the aged and infirm soldiers, this is a matter of importance.

It is better to have a separate catheter for each case, and to change to new ones often, not using them after they become spongy or soft. Oil should never be used, but white vaseline or some lubricant not destructive to rubber. Care should be exercised that none of the lubricant be rubbed into the eye of the catheter. A stream of clear, cold water should be run for some time through the instrument after each use of it, the outside thoroughly washed with cold water and soap, and the instruments kept in a clean, folded towel. Occasional soaking in a bichloride of mercury solution is desirable, but thorough cleansing of all instruments used is the important feature.

A proper diet for this class of cases is of more use than medicine. The stimulating meat, and coffee, and whiskey regimen, which so many of them prefer, is abominable.

The second childhood does best on the diet of the first. The rheumatic, paralytic, epileptic, and generally crippled old men in our homes would be far better off to substitute for three fourths of the meat they desire, easily digested cereals, soups, fruit, and above all, milk.

Another result of prostatic enlargement is vesical calculus. We shall find that in some cases of calculus where the patient is old and feeble and unwilling to incur the usual risk of a radical operation, much may be done to prolong life and render existence at least fairly comfortable by this method of treatment. If the stone be smooth and moderately non-irritating, its natural tendency to growth may be greatly diminished by removing often all the residual substances, which, if left, inevitably promote its increase by slow accretions. After the irrigation, a small medicated solution suited to the acid or alkaline condition of the secretions is beneficial. I have seen in consultation with Dr. Burke, of South Norwalk, one of our consulting staff, a case which has been for some four or five years treated by him in this manner daily. The patient is a nervous dyspeptic, with decided opinions of his own, objects to an operation as long as he can live comfortably without it, transacts a good deal of business, and seems to hold his own pretty well at the age of seventy. Might not some of us, who consider ourselves quite sensible, incline to delay in such a case, where delay does not seem to be more dangerous?

The above views, though prepared as a part of my last annual hospital report, may be taken as my answer to question No. 3, "What are the effects of prostatic enlargement, and how may they be counteracted?"

In answer to question No. 4, "When is operative interference indicated, and what operations may be safely performed for prostatic enlargement?" operative interference such as I have suggested in the foregoing, is indicated as soon as any considerable retention is manifest, especially in those cases showing indications of cystitis, the most common effect of enlargement. Cases differ materially in this respect. I

have known many old men who never completely empty the bladder, retaining from one to two ounces, who get on very well without any treatment. Where the calls are not very frequent, the urine clear and normal, I let them alone. The dangers of non-interference in such cases, I believe, are much exaggerated.

Regarding the second part of the question, "What operations may be safely performed?" I have to answer that the foregoing, conservative method of operation, or treatment, if the term operation be inappropriate, is entirely safe, and in a large percentage of cases, very efficient. It has been shown that radical operations for the entire removal of the prostate, by our best authorities, are fatal in about twenty-five per cent. of the cases, while the glands of the harder variety are not amenable to this form of operation. A persistent carrying out, therefore, of the safer, conservative method may justly have some claim upon our attention.



## WHAT ARE THE EFFECTS OF PROSTATIC ENLARGEMENT, AND HOW MAY THEY BE COUNTERACTED?

By DOUGLAS AYRES, M. D., of Montgomery County.

*October 13, 1896.*

Although the prostate is usually described as a gland, it might, with propriety, be called a muscle, as so small a portion of it is really glandular. Some investigators think that the small secretory glands are simply of the mucous membrane, and extend into the muscular tissue in the same manner that the other glands of the urethra extend into the surrounding tissues.

The late Dr. Gross made some interesting researches with regard to the size of the prostate from early life to the twenty-fifth year. He found its average weight at birth 13 grains; at 4 years, 23 grains; at 12 years, 43 grains; at 14 years, 58 grains.

Bearing so close a relation to the bladder, surrounding, in fact, the surgical neck, one of the first and prominent effects of enlargement is to produce changes in the calibre and course of the urethra and possible obstruction to the flow of urine. I say "possible obstruction," for we find enlargement without obstruction. It has been conclusively proven, and is undoubtedly the experience of many here present, that a very large prostate may exist without any obstruction to the free flow of urine. This has been found to be an even and general enlargement. Enlargement may not be very considerable, if it is not general but unequal, to produce a marked change in the urethra, by lengthening and narrowing so that it is reduced to the smallest capacity. It has been found from the examination of a number of enlarged

prostates which caused no impediment to the flow of urine, that one of two conditions existed, either hypertrophy, chiefly in the lower segment, in the direction of the rectum, leaving the urethra unchanged, or enlargement, leaving channels between the enlarged masses, through which the urine may pass without obstruction.

Enlargement with special upward growth of that part of the gland described by Sir Evard Howe as the third lobe may produce, if it be central, quite complete obstruction of this portion of the urethra to the flow of urine or the passage of a catheter for the relief of retention. In the case of a patient who died recently, aged sixty-eight years, a sufferer from enlarged prostate (who was obliged to practice auto-catheterism daily) I found a pedunculated condition of the enlarged third lobe, which extended well up into the bladder, and was deeply furrowed, probably from the frequent introduction of his instrument. Where the enlargement obtains in one of the lateral lobes, the urethra may be deflected to the opposite side, a form which in itself only very rarely produces complete obstruction.

Circumscribed tumors sometimes increase the size of the prostate and are found in various parts, inclosed in capsules of connective tissues. They are most frequently found in the base of the gland near the neck of the bladder, back of the urethra, into which they may project and seriously obstruct.

The first effect, then, of enlargement of the prostate is to produce those changes in the capacity and course of the urethra that we have just enumerated. Then obstruction to the passage of urine follows. At first it may interfere but slightly with this function, simply preventing a free flow, and full evacuation of the bladder. The residual urine soon decomposes, producing in time local inflammation of the mucous coat of the bladder, which may extend to other parts of the surface, indeed become general, and in time destroy the mucous coat by ulceration. Thickening of the muscular tissue and sacculation of the bladder are frequent effects of

interference with the free evacuation of urine from the violent efforts to expel it. Paresis of this organ is also one of the prominent effects.

Dilatation or inflammation of the ureters primarily, and inflammation of the kidneys secondarily, are later results of this condition. Vesical calculi may also result from the imperfect expulsion of urine, as it is very apt to deposit phosphates, and so lay the foundation for stone. Complete retention of urine may occur early, but is generally one of the latest symptoms of this disease.

Knowing the period of life at which this difficulty is most likely to obtain, care should be exercised by the physician in his examination as to the nature of the cause of complaint; every symptom should be learned by carefully questioning the patient, as its early recognition is of the greatest importance. Those symptoms which have been enumerated as the earliest and the least likely to alarm the patient, should be given careful consideration and their import fully explained to him. If the patient be fortunate enough to make early application for relief, much may be done by proper advice, to counteract the condition which gives rise to the symptoms. He should be impressed with the importance of strict attention to the condition of the bowels. A daily evacuation should be advised and secured, either by some mild laxative taken upon retiring, or by enemata. A free flushing of the colon by large and deep injections, with the pelvis raised to favour the operation, will be found of great advantage, especially where the constipation is obstinate. Much practical experience may be gained by the patient, by close attention to his symptoms, under the advice and guidance of his physician, especially for the relief of the condition just mentioned; much as to the protection of his body by suitable clothing and selection of proper diet; the latter should be very plain, but nutritious, and such as may be easily digested and not highly seasoned. Moderate exercise, especially of a passive character, and the avoidance of exertion sufficient to cause much fatigue, should be enjoined.

The importance of regularity as to the time of relieving the bladder of its contents should be firmly impressed upon the mind of the patient, as also the benefit to be derived from care as to the amount of fluid taken, more particularly such beverages as beer, wine, etc., which may be taken thoughtlessly, and produce over-distention of the bladder. Upon the theory of the "ounce of prevention" much may be accomplished by instructing our patients and friends (when they have arrived at the age when this condition is likely to obtain) as to the symptoms which should induce them to seek medical advice. "Forewarned, forearmed." The physician may be consulted early and thereby be enabled to prescribe a course that will retard at least those changes in the gland which must take place sooner or later, with all the effects which necessarily follow. The amount of residual urine should be determined early, and if it is small, indicating but slight interference with its free discharge, or if none be found, and rectal examination reveals enlargement, which may interfere with the venous circulation of the part and so give rise to the symptoms of vesical irritation, dilation by the sound as an initial procedure may be of benefit, especially if the enlargement is not very firm and the instrument can be introduced easily. Too great care can not be exercised in this procedure as to manipulation and aseptic and antiseptic precaution. This may be repeated every five or six days. If the residual urine should be found to be sterile, and to amount to two ounces or more, the catheter should be used with regularity and with the same precautions as in the use of the sound; the frequency of its introduction, whether once, twice, or more daily, should be determined by the amount of residual urine. The choice of the kind of catheter is also a matter of much importance. The larger sized soft rubber, a number nine or ten American scale, will answer the best purpose in the great majority of these cases, as it is the safest for auto-catheterism, which generally becomes necessary on account of the frequency of its requirement in order to free the bladder of



a constantly accumulating source of irritation. The several forms of the Mercier catheter are in some cases almost indispensable.

Too much care cannot be taken in the important matter of instructing the patient in aseptic and antiseptic methods when it becomes necessary for him to relieve himself. I am satisfied that more harm has been done in the way of increasing inflammatory action, both in the bladder and urethra, by the use of imperfectly cleansed catheters, than by the frequency of their use, or ignorance of procedure.

Vesical irrigation daily may in many cases prove very beneficial. Simply sterilized water at about 100° F. at first will answer the best purpose; with this the bladder may be irrigated, by means of a fountain syringe and catheter, using two ounces or a little more and introducing slowly. This may be repeated a few times if the water returns turbid, until it is tolerably clear. Once daily will usually prove sufficiently often for this procedure; later antiseptics in addition, if the conditions as evidenced by the urine seem to call for their use.

There are no medicines that in the experience of the profession have any very marked effect upon the enlarged gland. Among the more prominent that have been recommended is ergot, which, it has been suggested, may act upon the same theory that it acts upon the uterus. There are some who have reported favourably with regard to this drug, as to its power to retard enlargement or even prevent it, as well as to reduce its size. Some report good results from its use in the softer forms of enlargement. Others report some benefit, but attribute it to its effect upon the muscular coat of the bladder rather than to any effect upon the gland, tending to reduce its size. As to remedies for the relief of its effects, in the inception of the resultant cystitis, when there is but slight irritation, and the acid is found much in excess diluent drinks with the milder alkalis produce good results.

As a summary, I would offer the following:

1. Instruct the patient to evacuate the bladder at regular intervals.

2. To protect the surface by suitable clothing.

3. To exercise extreme care in the diet; care in the quantity of fluid taken daily, especially as to excess and so producing over-distention.

4. Strict attention to securing a daily movement of the bowels.

5. If there be a few ounces of residual urine, catheterism at regular intervals.

6. Vesical irrigation when the urine becomes turbid or offensive.

7. The use of such medicines as in the judgment of the profession and our own experience produce the best results.

These we judge to be the chief counteractive factors of the effect of those changes which are recognised as a very frequent accompaniment of advanced life,—factors which tend to preserve the tone of the bladder, and thereby enable it to discharge its functions (though imperfectly) with some degree of comfort to the patient. And while we acknowledge our lack of power to prevent the cause, we possess means by which we can retard the progress of its effects and make more comfortable the decline of life.

#### DISCUSSION.

DR. E. D. FERGUSON, of Rensselaer county, said that he felt that the subject was one which could be discussed only with difficulty, for the old matter had been thoroughly threshed out in the past, and the new material had been so recently presented to us. However, he had been struck with the practical expedient referred to by Dr. Alexander, and one which he had himself resorted to with much satisfaction. It had been his custom for some years past, in the drainage of pus cavities, to secure the tube at a proper depth by the insertion of a stitch or two through the skin and subcutaneous tissue. He had never seen any harm come from this expedient. He had used it for years in the thoracic cavity, but only about two years ago, for the first time, in a case of drainage of the bladder. In this case, the patient would not leave the tube alone, so that it became necessary to secure it in position. He had

always felt that there was a certain amount of insecurity in the use of the various tapes and similar devices for holding these tubes. The stitch need not invade any part which would be apt to be injured, and it was very important to have the drainage-tube just at the proper depth to secure the best results.

DR. H. O. MARCY, of Boston, was invited to participate in the discussion. He said that he desired to return thanks to his distinguished friend, Dr. Gouley, for his masterful paper, and for the great work in this department that he had done for many years, and which had not received sufficient recognition.

In this connection, he desired to call attention to a paper that had been presented to the International Congress in 1887. The paper had been written, at his suggestion, by his friend, Dr. Wilson. Dr. Wilson had devoted two years to the special study of this question. He had felt that the tumors of the prostate were amenable to relief by entire removal, and this had led him to suggest that this work be undertaken. He had only once done this operation himself, and that was during the past year. He had been delighted at the ease with which he had been able to enucleate a soft prostatic enlargement through the wound. He had been greatly aided in this operation by the employment of the Trendelenburg position, a matter which had not received attention so far in this discussion. The only criticism he could make of the excellent paper of Dr. Alexander, was that we might close the suprapubic wound and rely entirely upon the perinaeal drainage. In this way, he thought, we should avoid a certain amount of danger. He predicted that this operation would have a wide range of usefulness, and would prove to be a most brilliant addition to the surgery of the future.

DR. GOULEY, in closing the discussion, said that Dr. Alexander had spoken of the reduction of the expulsive force of the bladder. While late in the disease it was strictly true, nevertheless, that the retention of urine, or the existence of residual urine, was certainly not due to any reduction in the expulsive force of the bladder. This was a point which he thought deserved consideration. The cause, both of the presence of residual urine and of the frequent existence of retention of urine, was the material obstacle—the obstacle, whatever it might be, which closed the vesical orifice. In the early stages of the disease,—and there was vesical irritation almost from the very first—there was a certain element of spasm at the vesico-urethral orifice, but whether closed by spasm or by

the enlargement of the lower third of the isthmus, was all one. There was closure of the vesico-urethral orifice long before there was loss of expulsive power. This loss of expulsive power usually came on late, and was due in many instances to interstitial cystitis. It was not a true atony, but really another obstacle to the contraction of the muscular fibres. Half an ounce of residual urine does mischief; hence, it was not wise to wait until there was one ounce of residual urine before resorting to frequent and aseptic catheterism. Such catheterism did no harm whatever.

A point in Dr. Alexander's paper, which was worthy of further emphasis, was that regarding the enucleation of the prostate with the finger, and not with any sharp instrument. The use of such sharp instruments he considered unsafe, because of the liability of wounding some large vessel and causing troublesome haemorrhage. Many years ago, he had had occasion to do this. After having cut into the urethra and the apex of the prostate, he had begun to enucleate a number of prostatic concretions, some of them a centimeter in size. The enlargement of the prostate, in this case, was due to the presence of numerous concretions. Before he finished, he had removed eighteen concretions having an average diameter of one centimeter. With these he had removed a goodly portion of the prostate. He saw the patient twenty years later, and the prostate had shriveled considerably. With the finger and a small dressing forceps the whole enucleation had been performed. He would again repeat, that Alexander's operation of prostatectomy was the greatest operation that had ever been performed on the genito-urinary organs, and he deserved the greatest credit for it. It was bound to succeed, if properly done.

Dr. Gouley said, that if Dr. Ferguson used a proper kind of tube, there would be no trouble with the drainage-tube. At the hospital, they used a very thick-walled India-rubber tube, at least half an inch in diameter, having one large eye. With these there was no difficulty, and no danger of getting loose when properly fastened. He thought the Trendelenburg position was the worst position that could be used for enucleation of the prostate, because the operator desired to have the prostate forced down to the wound.

A member having remarked that he had heard nothing said about the value of castration for prostatic enlargement, Dr. Gouley said he hoped it would not be discussed, for he felt sure there was no difference of opinion in this Association. The less said about it, the better—we were all virtuous people here.



## THE IRRITABLE STUMP.

By JOSEPH D. BRYANT, M. D., of New York County.

*October 13, 1896.*

The subject to which your attention is called is self-assertive of its importance, not only on account of the frequency with which it forces itself upon the attention of the profession, but also on account of the repeated annoyances and trials it begets for the unfortunate possessor. But little attention, indeed, is bestowed on this condition as an independent subject, although the several factors leading to it are each in turn duly considered in connection with the subject of amputation.

The not infrequent occurrence of irritable stump, and the trouble and infirmity which it causes, appear to me to entitle it to the dignity of an independent presence in the chapter of amputations, if for no other reasons than to emphasise its individuality, and cause a recount of some of the instrumentalities leading to it.

A few of the sources of information on this subject are quite fertile ones. Among those most instructive are the records of the late war, and of the manufactures of artificial appliances. The records of the first contemplate the exigencies of a stump which, not unfairly, may be denominated the "war stump." The second include many of the first class, and also a sufficient number furnished by the events of civil life, to enable one to form an estimate of the influence of experience, deliberation, and improved method and environment on the comfort and utility of stumps.

In the Transactions of the Congress of American Physicians and Surgeons, one finds a careful analytical record of "four hundred and thirty-nine recovered amputations in the

course of the continuity of the lower extremity," made by Dr. Stephen Smith. Each of these cases is a product of the late war, and was carefully examined by the late E. D. Hudson, M. D., of this city, whose experience in such matters as these is strongly emphasised by the facts that he himself was a prophetic artisan of earnest effort and honest intent, and also a graduate in medicine. The latter circumstance should give this report greater value than might otherwise be attached to it.

It is well, indeed, that the portion of the body on which this report is based, is the one of the greatest importance to society, and the only one, in fact, that offers a severe practical test of the efficiency of a stump. The stumps of 287 amputations of the leg, and 132 of the thigh, are considered to-night in this brief presentation.

It appears that of the former, 35, or 12 per cent., were unhealed after five months' time, and some of these not even after a year or more. Forty-six, or 16 per cent., were imperfect stumps, the imperfections depending on necrosis, sloughing, muscular retraction, etc. In three instances, "bad stumps" are noted. This expression means, I suppose, that radical measures would be necessary to render them of service in any particular degree. Of the remainder, 81 (28 per cent.) were classed as good, 16 as excellent, and 5 as fair. Inasmuch as no estimates are made by the writer of these stumps until after the lapse of five months from the time of amputation, but 186 of the entire list (287) come under direct consideration. Of this number (186), 81 are regarded as good, 16 as excellent, and 5 as fair, a total of 102; while to the remaining 84 can be applied the expressions, "unhealed" (35), "imperfect" (46), and "bad" (3). Thus it appears that in military service of the late war, in a series of 287 amputations of the leg, five months after operation about 30 per cent. of the stumps were either unhealed (12 per cent.), imperfect (16 per cent.), or bad (1 per cent.).

In 132 instances of amputation of the thigh, also considered five months and longer after operation, it was found

that in 80 cases the records admit of the following classification of the results: Unhealed, 21; imperfect, 21; good, 33; fair, 2; and excellent, 3. Thus, it appears that 42 of these 132 amputations (31 per cent.) were either unhealed or otherwise imperfect at the time of examination. The nearness to each other in this respect of the results of amputation at the upper and lower portion of the limb is surely quite interesting.

It is but fair to recall the fact, and, too, with the risk of being regarded as juvenile, that these amputations and their treatment belong to a pre-antiseptic period of surgery. However, notwithstanding this, one cannot believe that the results were due alone to the absence of antiseptic methods. No doubt but the exigencies of military surgery contributed their share to the final result.

I am sorry, indeed, that no similar list of cases relating to civil surgery is known to me, as a recital of comparative facts from such a source would be extremely instructive. Hoping to find a record of something important in this respect in the experience of artificial limb-makers of this city, I visited some of the leading artificers, but was sorely disappointed with the outcome, as it appears that no care is taken by them to determine the results of amputations as based on the kind of flap employed, or the surroundings of the patient.

The fact of the existence of irritable or hypersensitive stump was recognised by each of them, but the infirmity was regarded by one as the result only of a badly-fitted limb, a condition which disappeared quite promptly when the particular appliance of the first person and singular number was called into use. Another manufacturer clearly asserted that about 10 per cent. of the stumps of civil practice were of the variety known as irritable stump. And, too, the same gentleman expressed the belief, based on his experience as an artificial limb-maker, that the owners of stumps had contributed quite as much to the irritable state as had the surgeon. He expressed his belief in this regard almost epigram-

matically when he substantially said: "The end of a tippler's stump will announce his excesses as quickly as the end of his nose." However, I did succeed in eliciting the following facts from these gentlemen regarding stumps, which practical observation had taught them were of prime significance. Surely, with these factors at hand, they could confidently promise comfort and usefulness to the wearer of an artificial appliance from the outset.

1. A flap of sufficient length to prevent tension at the end of the stump when the weight of the body is received on the artificial limb.

2. A movable cicatrix.

3. A periosteal covering of the divided end of the bone.

The first desideratum is regarded as the most important, since, if it be met, the evil influences resulting from the absence of the last two are reduced to a minimum, or prevented entirely. While it is no doubt true that the degree of tension made on a flap by an artificial limb, when in use, can be regulated by a careful adjustment of the appliance, still, it is physically impossible to remove all tractile influence from the stump arising from the weight of the body, unless the appliance be fastened to the limb at a considerable distance above the end of the stump, as to the thigh, in amputation of the leg.

The best illustration of the proper covering of the end of an extremity in the normal state, is found at the finger tips and at the plantar surface of the heel. At these places, the integument, the underlying fatty and fibrous structures, and the periosteum, are proportionately provided and so arranged as to meet the functional requirements of the parts in the best possible manner. Here, both direct pressure and peripheral traction are each continuously and comfortably borne. If tissues similar in structure and arrangement to these could be provided for the ends of stumps, then, indeed, the structural annoyances incident to them would disappear, provided their circulation and sanitation were properly maintained. However, the construction of such a covering as



this at will, does not at present fall within the range of human endeavour. We can, nevertheless, make approach to Nature's attainment in this respect by imitating, as best we may, the manner of her handicraft.

The proper length of a flap is the most important factor of a useful stump. While it may be difficult at times to indicate exactly the suitable length of a flap in amputation of each portion of an extremity, still it is not at all difficult to realise that the flaps of those stumps that are to bear the weight should be made of more liberal dimensions than those of prospective dissimilar requirement. It follows, therefore, as an independent proposition, that the flaps of amputations of the lower extremities should be made longer than those of the upper.

Fifteen years ago, a military friend of mine who had sustained an amputation at the lower third of the leg for compound fracture at the ankle-joint, visited me, and asked relief from the great annoyance of an irritable stump. He was then wearing an artificial limb at such times as the physical condition of the stump would permit. In this instance, the flap was too short, the cicatrix was adherent at the end of the tibia, and the fibula projected below the associate bone. After carefully considering the matter, the following plan of action was decided upon and carried into effect. The good result which followed in this particular case, together with similar results in many later cases, lead me again to relate the method of procedure :

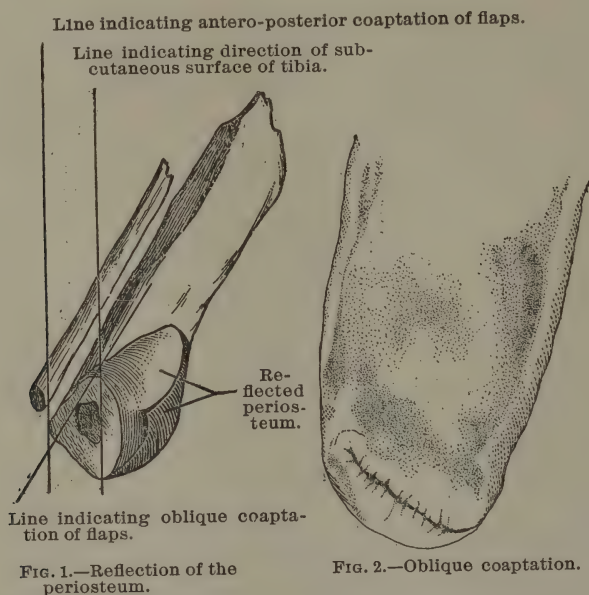
1. A circular flap was made of a length equal to one fourth plus the circumference of the limb at the point of division of the bone.

2. This flap was reflected upward equally for a distance of about one half an inch, then a transverse incision was made across the subcutaneous surface of the tibia at the line of reflection of the flap, through the periosteum.

3. The periosteum was further divided at the limits of the anterior and posterior borders of the subcutaneous surface by repeated incisions made in the long axis of the bone

at these situations, in order that the periosteal and non-periosteal portions of the flap might be uniformly constructed.

4. Therefore, the portion of the flap corresponding to the subcutaneous part of the tibia was lined throughout its principal area with attached periosteum that had covered this surface of the bone (Fig. 1). The remaining portion of the circular flap was reflected upward the same as if the periosteal lining had been omitted. The flaps were united obliquely in such a manner as to cause the periosteal portion of the flap to lie smoothly across the end of the bone (Fig. 2). The flap was united in position by bandaging until firm union had taken place. The line of junction fell between the ends of the two bones.



In a patient that had sustained amputation of the lower third of the leg for malignant disease of the tarsus, and thereafter the disease returned in the popliteal space, followed by amputation of the thigh, the end of the stump was secured, carefully dissected, and the condition of the parts

determined. Fig. 3 indicates their relation, which was normal in structure in all essential respects.

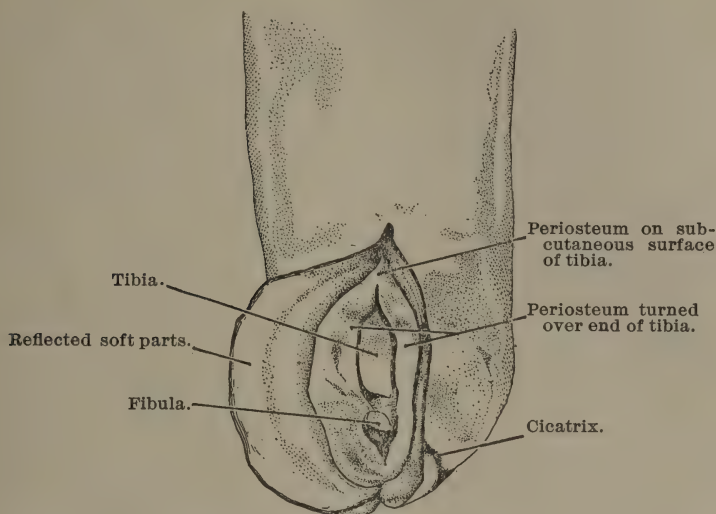


FIG. 3.—Dissected specimens showing the relation of parts.

Thus far, the operation has been performed by me fourteen times, with complete success in all but three instances. Two of these were performed on the same patient, right and left limb, respectively, for the relief of painful stumps. As before remarked, these attempts were not successful, and thereafter the patient submitted to repeated amputations with no better result. The cause of the repeated misfortunes in this case was not apparent. The remaining case was also a re-amputation for the relief of irritable stump in a young man who was much addicted to the use of alcohol. In this, the wound healed tardily, and when last seen, although healed, the stump was tender, and resented alike the presence of an artificial appliance and the ingestion of alcohol stimulants. Thus it is seen that eleven of the cases made a prompt and satisfactory recovery, and were followed by painless pressure-bearing stumps when last observed.

The artificial limb makers concur earnestly in two facts:

1. A flap of proper length.
2. A periosteal covering of the end of the bone.

I have practised this method at other parts of the leg, but not often enough to warrant me in placing especial emphasis on the results. The same, also, may be said of the thigh, so far as periosteal flaps are concerned.

In conclusion, I desire to express the belief:

1. That the flaps of all pressure-bearing stumps should equal in length not less than one fourth the circumference of the limb at the point of division of the bone.
2. That irregularly formed flaps should be constructed on this basis.
3. That a periosteal covering of the divided end of the bone should be made when possible.
4. That, when possible, the periosteal covering should remain connected with the superimposed tissues.
5. That the method of procedure already described secures the most serviceable stump in amputation at the lower third of the leg.

#### DISCUSSION.

DR. MARCY, of Boston, said that as a student he had asked his instructor, Professor Bigelow, what would happen if a periosteal flap were made to cover the bone, and the reply had been, that it would probably result in the formation of "a lump of bone" on the end of the stump. The speaker said that he was deeply interested in this subject, and desired to express his sincere thanks to the writer of this paper. If the nerve were closed in and covered over with perineurium, one could do much to avoid the occurrence of another element in producing irritable stump—neuroma. He believed that it was much better to close in the stump by suturing the tissues, layer by layer, and that artificial limbs could be used with great satisfaction upon such stumps.

DR. DIDAMA, of Onondaga county, said that the reader of the paper had stated that where the bone was covered with periosteum, and the other tissues were brought down after having been separated from the periosteum, that sloughing or absorption took place. It was, therefore, important to emphasise the fact that Dr. Bryant avoided the separation of the periosteum from the tissues.



# THE TECHNIQUE OF INTUBATION IN CHILDREN. SOME REMARKS ON THE TIME FOR OPERATION AND AFTER TREATMENT.

By THOMAS J. HILLIS, M. D., of New York County.

*October 14, 1896.*

It is not the object of this paper to treat on the history of intubation or to follow the progress of its development from its infancy to the present time. That could not be crowded into a short paper; indeed, it would take a volume to do the subject justice.

While, then, confining myself to the practical aspect of the case, in passing, it is impossible not to pay tribute to O'Dwyer, whose energy and intelligence have inspired this operation with a new life, and whose marvelous mechanical skill overcame obstacles to others insurmountable. The brilliancy of this genius has shed lustre on the profession to which we have the honour to belong. He has bequeathed to posterity a heritage rich in the amelioration of human ills, and built for himself a monument imperishable in the hearts and affections of a grateful profession; and now, while he is still pointing the way to further progress in the higher development of our art, it is our privilege to follow in his footsteps and profit by his example.

To begin, the larynx of a child differs widely from that of an adult. Looking from above downward, the larynx of the adult has the appearance of a mortar hod, the handle of the hod not inaptly representing the trachea. In the young child, there is seen a pea-like slit behind the hyoid bone at the base of the tongue. This is the larynx. Immediately above, and, as it were, looking down, is an eminence, the epiglottis. In a child from one week to two months, the glottis

and epiglottis are very apt to be overlooked. It must be understood we are working in the dark, and only by the sense of touch, our objective point the glottis, our guide-post the epiglottis.

The ability to do good and rapid work entirely depends upon the recognition of those landmarks by the operator. If he dilly-dallies, beats about the bush, and chases after the larynx with the index finger of the left hand, while the right, armed with the introducer, is prodding the adjacent tissues in a vain effort to enter the glottis, he must surely fail by finally slipping his tube over into the oesophagus—the graveyard that hides his incompetency. To avoid this mistake, keep ever in mind the anatomical difference between the larynx of the child and the adult. Again, the larynx of the adult is much more deeply set than that of the child. Before any attempt to intubate is made, the physician should practise on the cadaver, and be able at a moment's notice to place the tip of his finger on the spot where the larynx is supposed to lie; in short, he must locate the glottis. If he is not able to do this, he has no business to try. It will bring defeat and humiliation on himself, and increase the sorrow of the family.

The instruments used in intubation, from their nature, are frail. If ever the words "Handle with care" have any meaning, it is in this case, for any jabbing or shoving is sure to be resented, either by breaking the instrument, or, if the operator is unlucky enough by accident to get into the larynx, he will tear the ventricle, wound the chords, or punch a hole in the wall of the trachea, probably the anterior wall. It would be well for any one intending to practise intubation to make himself acquainted with his instruments, to spread them on his office table, and take note of each joint and hinge, and every weak and strong point they may possess, and by various passes and motions practise on some phantom subject.

In order to use his instruments well, he must know them well; they must have an active place in his mind. A good

swordsman is acquainted with his steel. A huntsman knows the points of his rifle. The Arab is attached to his steed; he knows the horse and the horse knows him. Between them there is a mutual understanding, and from this understanding the best results are attained. Then, finally, the operator must know and understand the tools he is to work with, more particularly when it is known that any bungling on his part may mean death to a fellow-being.

The operation is said to be most simple, and easily accomplished after a little experience. I cannot quite agree with this opinion, and I regard the operation as hedged in with difficulties and dangers. In fact, there is no branch of medicine or surgery where the technique is so easily forgotten as this one now under consideration, and in order that it should not be forgotten, the operator must keep in touch with the cadaver as well as with his instruments, and not lose sight of it unless he has unusual opportunities of practising on the living subject.

While the sense of touch is of the first importance, it is not all. There is the faculty, as it were, of seeing in the dark and being dexterous in manipulation. The trained finger of the gynaecologist loses its cunning here, and the laryngologist, so well acquainted as he is with the topography of this region, this land of his adoption, the pillars of the fauces, the roof of the mouth, the base of the tongue, and the walls of the pharynx, at his first attempt to introduce a tube into the larynx of a child suffering from croupous laryngitis, is beaten on his own ground. His efforts end in signal failure; he cannot locate the larynx, and will not be able to do so until he studies the technique of intubation.

#### PREPARING THE CHILD.

If the surrounding conditions permit, the child should be stripped naked, and with neatness and despatch rolled in a piece of strong muslin or other cloth. It is much to be preferred to the bulky and clumsy blanket usually used. It should be arranged so as to have it pinned behind, the arms

hanging by the sides, forearms and hands crossed on the abdomen. This is done to keep them off the chest, as any bulging or enlargement here is apt to interfere with the movements of the operator, who wants a clear field.

The child now recognises that something is being done, and grows more fretful and uneasy, but will in a short time be reconciled to the situation.

The child is now held by a nurse—a trained nurse, if possible—upright in her lap. She grasps the child's legs between her knees, facing the operator. The assisting physician, standing behind, holds the child's head firm, and binds, as it were, nurse and child to the chair. The position is now directly upright, and, as the saying goes, the child is hanging, as it were, from the top of his head.

#### PLACING THE GAG.

The vast majority of children develop croup between the eleventh month and fourth year; so from this fact, the gag must be brought into requisition very frequently. It is a powerful instrument, and looks not unlike bull-dog forceps, and is provided with a groove above and below for the reception of the teeth of the upper and lower jaws.

The physician is assumed to be right-handed. He may have to force the mouth open with a spoon or tongue depressor; but as a rule, in croup and stenosis of the larynx, the mouth is involuntarily open, the nose and mouth making strenuous efforts to drink in the particles of air.

The gag is placed quickly to the left opening, gradually and carefully, and gliding its grooves over the teeth, far back between the jaws, as far as possible. By this method there is less liability to dislocate or break the jaw—an accident that happens not infrequently—than by first carrying the instrument to the angle of the jaw, and suddenly and abruptly opening it. If the gag is properly placed, the handles will not lie snugly on the side of the cheek, but point a little outward.

Too much stress cannot be laid on the value of placing the gag; in fact, it is the first step toward success.



Now we are ready to introduce the tube. The physician should sit on a chair or stool, the latter preferred, as by sitting there is more composure, more self-possession, and the operator is more at ease. The assisting physician holds the gag firmly by the handles, so that it cannot slip off the cheek. The mouth is now open wide. Let us look for a moment at this open mouth. We can see the gag filling up a not inconsiderable space to the left, while the right corner is reserved for the index finger. From this it can be seen that there is little space left, and that the operator must utilise this space to the very best possible advantage.

Now there are two ways of proceeding.

First, slip the index finger of the left hand rapidly but gently along the floor of the mouth; keep as near as possible to the angle of the jaw; draw the hyoid bone upward and forward, the so-called hooking-up of the epiglottis process; then with dexterity push the finger to one side, of course the outside, and with the right hand introduce the tube riding on the obturator, traveling under the roof of the mouth exactly in the median line to the chink of the glottis, which it enters just behind and below the base of the tongue. Elevate the handle of the introducer as the tube enters the glottis, until its perpendicular is at right angles to the plane of the floor of the mouth; after reaching the cricoid cartilage, the direction is downward, parallel to the plane of the long axis of the trachea.

It is easy to observe these points, when their value is appreciated, as maintaining these planes and perpendiculars will keep the tip of the tube off the walls of the larynx, and greatly facilitate its introduction. When the tip of the tube engages in the glottis, push it gently, but with a firm hand, by the trigger, which plays in a groove running up the handle of the director. When the collar is caught in the grip of the larynx, hold it by the margin of the finger, and withdraw the obturator. The tube is now in place.

## THE SECOND METHOD OF PROCEDURE.

The operator, sitting or standing, as suits him best, tilts the child's head a little on the shoulder of the nurse, and quietly thrusts his left index finger backward along the margin of the tongue until its tip recognises the slit-like aperture known as the glottis; then slip the instrument transversely across the tongue until its nose comes in contact with the finger. Right the director and elevate the handle; pass it along the finger as a guide, when it will become immediately engaged in the larynx. Push off the tube with the side of the finger, and withdraw the obturator. Now, as before, the tube is in place. If it requires any considerable force to press the tube down, stop at once; there is something wrong. It is of the first importance to know when to stop, indeed, second only to knowing how to do the operation well.

The peculiarities of the second method are: First, that the tube lies flat across the tongue, the convexity of the instrument just touching the gag; second, the median line need not be considered at all; third, the instrument is made to right itself as it travels backward towards the larynx; fourth, the tilting of the head while altering the anatomical lines and angles will put the tissues of the part on the stretch, thereby increasing the facilities for recognising the larynx. Further, by tilting the head we have the teeth a little out of the way. These teeth are made a formidable obstacle in the path of the operator by hampering him from above, and often pinching the first phalanx of his index finger, causing annoyance, if not actual danger from blood poisoning. Then again, by the tilting process the chin is lifted from the breast, which is an advantage of supreme importance when accurate and rapid work is the thing desired.

It may seem strange to depart from the median line when the objective point is the terminus of that line; but however paradoxical it may appear, a straight line is not always the shortest distance between two points, especially if a moun-

tain intervene. In that case, it is easier to go around than climb the mountain. In the other, it is easier to enter the mouth with the instrument on the flat, resting across the tongue, than in the perpendicular and median line. In short, the object of the second plan, in passing from without inward, is to take advantage of, and be accommodated by, the most favoured conditions.

#### HOW TO TAKE OUT THE TUBE.

To do this, there are four ways. The first is very simple. The string being attached, pull in the direction of the median line, when the tube slips out easily.

The second way is called expressing the tube. If the child is under a year, the cartilaginous rings of the trachea are yet soft and yielding, and respond to manipulation. Place the child on his back, as in Silvester's method for artificial respiration. Put a small block or pillow under the neck and press the head back; this will bring the trachea prominently into view. Now manipulate the sides of the trachea, as in delicate massaging.

Direct your force upward and backward, with the tip of the index finger of the right hand on the larynx, to steady the tube. Then turn the child on his side, elevating the buttocks, and slip the index finger and thumb into the mouth, when the tube can be easily and quickly withdrawn.

Third, for this purpose there is an instrument called an extractor. By placing the nose of this extractor in the mouth of the tube, and pressing with the thumb on a spring, the nose or jaws open widely, biting the calibre of the tube, and holding it tightly in its grip. Now withdraw the instrument and the tube comes too. There is an old saying, that the best way of catching a bird is by first putting a little salt on its tail. The same way with the extractor; first put it into the tube and, like the salt on the bird's tail, the catching is easy. Now, how are we going to put salt on the bird's tail or the nose of the extractor into the mouth of the tube? They are both very difficult undertakings, and require agility

and tact. At present, we will confine ourselves to considering the latter proposition.

The gag being in place, the tip of the index finger tries to locate the collar of the tube, which may be hidden or imbedded in a mass of organised deposit or adventitious membrane that very often practically buries the tube.

Now, the metallic click of the instrument when it touches the collar gives warning, and, by delicate play, the finger may direct it into the lumen of the hidden tube. It is very doubtful if any assistance can be rendered by the arytenoid cartilages as an aid in locating the tube, for the reason that these cartilages are in the child rudimentary and soft, and sometimes require the most delicate and exquisite sense of touch to be recognised themselves.

Since it is so difficult to enter the mouth of the tube with this instrument, and since, while trying to do so, much injury may be done to the larynx and adjacent tissues by opening and closing the blades of a mechanism that has such tremendous leverage, it has been considered wise to discard it altogether. To this end, a tireless and ceaseless worker in this field, Dillon Brown, adjunct professor of diseases of children at the New York Polyclinic, has invented an ingenious little instrument in the shape of a ring, but open at the centre, with a small, perpendicular bar having a hook at its extremity. This little ring is placed on the index finger of the left hand, so arranged that the hook will look up from the palmar surface. The tube is the same as before, only that a thread of semicircular wire rises from the centre of the collar, passing upward and backward, its convexity about two lines above, and parallel to, its posterior wall.

Now slip the finger armed with this ring in the median line to the root of the tongue, when it will at once become engaged in the segment of the wire rising from the head of the tube; then the extraction is easy.

The only disadvantage of this method is, that the tube, especially if too large, may rotate and bring the loop parallel to the median line, thereby increasing the difficulty of hitch-



ing on to the wire; even with this drawback, it is immeasurably superior to the clumsy and dangerous old extractor. The wire loop, so valuable in the fourth method, will not interfere with the field of operation for the few who prefer the third style of procedure.

#### THE TIME FOR OPERATION.

There is no duty connected with his profession that weighs so heavily on a physician's mind and heart as this one—when to interfere mechanically to save the child. He is confronted by three problems, namely,—Can the child get well without interference? Is it too early to interfere? Is it too late? He has ghostly memories of meddlesomeness on a previous occasion, when in his excitement he mistook simple for croupous laryngitis and laryngismus stridulous for stenosis of the larynx. These memories haunt him. The spectre clings to him. Now these grewsome recollections contribute not a little to make him nervous and unhappy. He wishes to make no mistake this time, and he will not by keeping in mind the following suggestions:

He is called suddenly into a sick-room. There is a child suffering from croup. He knows nothing of the previous history or treatment. The child's skin may be cold or hot. There is clammy perspiration, with often not marked cyanosis. The face may or may not be anxious and drawn, pulse feeble and beating irregularly, whether fast or slow. On percussion over the region of the back on both sides, there may be slight or marked dullness, according to whether air or water or both are in the pulmonary cells.

To the ear, the normal vesicular murmur is wanting. The sounds are those transmitted from the trachea, now the seat of riot and turmoil, and they are mixed, coarse, irregular, without vibration or interval of repose. Further, he sees the diaphragm—the great fly-wheel of the respiratory system—slow down to a few movements per minute; and moreover, he observes that the seat of respiration has been transferred from the thorax or chest to the trachea and larynx, the so-called shallow breathing.

Then the efforts of this new respiratory system at inspiration are long, vibrating, and laboured, while expiration is short, shallow, and jerky. At every effort of inspiration the auxiliary muscles of respiration at the root of the neck contract violently, drawing the head downward and forward on the chest, making great gaps and depressions in the supraclavicular and suprasternal regions. The heaving of this region is like the rolling of the billows, and as regular as a clock. The *alae nassae* contract and expand, and flap like sails in a cross wind. The mouth may be in repose, or the lips slowly moving in unison with the nose and muscles of the neck.

It takes some time to describe these symptoms; but the physician will see the situation at a glance, and recognise that the time to act is now or never.

Since it is a bloodless operation, he will have no difficulty in gaining the consent of the family, and even if his efforts are not crowned with success, he may still be able to command their confidence and gratitude in that he at least lightened the labours of their little one, and that the last moments of their darling were those of repose.

#### THE AFTER TREATMENT.

How long should the tube be left in the larynx? Just as long as it is necessary—until the danger of the development of false membrane has passed. As a rule, more danger is encountered by taking it out too soon than by leaving it in a little longer than required. The danger of the tube exciting inflammation downwards decreases the longer it is in place. Following the general law, the tissues soon become accustomed to the altered conditions, and the tube speedily usurps the functions of the trachea.

If the child begins to look like himself again, and take notice of his playthings and surrounding objects, and if the temperature is normal or nearly so and the child shows a disposition to eat well, the danger is in all probability over, and the tube can be removed, whether it is in one day or seven.

The physician would do well to remain on the premises for half an hour, and be within call for six or eight hours, as the larynx may get blocked by shreds of broken-down membrane, or, the pressure being removed, the parts may swell and fill the lumen of the canal. However, the physician must not become frightened, and rush for his case the moment he detects an obstruction, for there is always more or less after the removal of the tube; but if it becomes marked and progressive, he must act at once by replacing his tube. After placing the tube, there should be immediate relief, all the urgent symptoms at once subsiding. The air will pass through if the tube is not blocked by shreds of broken membrane that it pushed down. By giving the child a few drops of water in his mouth, it will excite the act of coughing and probably clear the air passage.

If no matter be coughed up and the breathing remain bad, withdraw your tube by the string or thread you placed in the eye at the collar when preparing for the operation.

The tube withdrawn, further coughing may free the trachea and there may be no further trouble, when rapid convalescence will ensue.

When the tube fails to give relief, and when no relief comes when it is withdrawn, the false membrane has extended down below its farther extremity. Now tracheotomy holds out the only hope, and in this instance is to be preferred to intubation.

#### FEEDING THE CHILD.

No matter what position the child is placed in while feeding, there is danger of particles of food passing into the larynx. However, some advantage is claimed by feeding with the head bent over, the child resting on his back on the lap of the nurse. The advantage is, that the food that may not be carried to the pharynx in the act of deglutition cannot block or choke the tube by dropping into the larynx, since it must gravitate into the mouth by having the body placed in this manner on an inclined plane. The anatomical

position being altered, the glottis is poorly, if at all, guarded by the epiglottis.

Now, with the head in this awkward position, the food passing over the larynx is apt to act on the reflexes and excite increased coughing, which often leads to death from exhaustion. Further, the diaphragm itself being more active gives a suction-pump action to the trachea, which may draw particles of food into the larynx, even though counteracted by gravity.

A good way to feed a child is to let him lie on his stomach and tilt his head, face down. By this method, he is not so liable to excite coughing, and there is an inclined plane, but of course not so marked as in the other position.

It is certain (though the act is involuntary) that he has more command of the constrictors, and that the larynx is more fixed, and the act of deglutition as a whole is more complete than with the body in the dorsal position, and with the head down and backward.

Some patients do very well in swallowing with the body in the upright position, and will resent, and make that resentment permanent, if any effort is made to depart from the natural manner of feeding. Give the child no food for half an hour; better still, if feeding could be postponed for an hour. That would give the lame and crippled tissues of the constrictor group an opportunity to recuperate, and by their increased activity and watchfulness prevent the particles of food in passing over into the pharynx from dropping into the larynx and finding their way into the bronchi, when speedy inflammation would follow.

The best food to give to a child wearing an intubation tube is bread soaked in milk or beef juice, or oatmeal porridge. Feed the child at stated intervals, a small quantity at a time, and about every two hours. Do n't take him at a disadvantage; let him see you prepare for feeding; by this means he will cough less, and it will decrease the liability of some particles slipping into the larynx.



AFTER THE OPERATION.

A great deal towards the successful termination rests with the family. If they are careless, forgetful, and indifferent, notwithstanding the warning of the physician that the danger is only half over, the probabilities are the child will die, though the operation itself was in every way successful and a road to recovery open.

Then, intelligent nursing is a factor to be considered, and the want of this nursing in the tenement districts is the secret of so many failures, not only in intubation, but in every form of operative procedure.

If those ever eager to do good, always prating in lecture rooms and on church platforms about the dear, neglected poor, and who go about hawking their philanthropy like hucksters and fish-mongers in a market-place, always ready to plant the plague-spot called free dispensary, would only consult those best able to give advice, and inform themselves on the real needs of the poor, it would be to wipe out the pestiferous dispensary, and plant on its ruins a school to train and instruct the people in the value and importance of self-reliance, temperance, fortitude, and hope.

Then philanthropy would run in its proper channel, and the moral and material sense of the poor be advanced and elevated, and the mortality of the city materially decreased.

## TEMPERATURE IS AN ELEMENT IN PROGNOSIS.

By JOHN SHRADY, M. D., of New York County.

*October 14, 1896.*

Temperature from time immemorial, from Hippocrates down, has been recognised as a factor in diagnosis rather than in prognosis. To be sure, at the start there was a certain vagueness of apprehension, but at last the study has obtained its proper status.

In the present paper the topic is to be discussed as a warning rather than as a doom, and withal with sideway glancings at some phases of its aetiology. It is to be understood, however, that this discussion is referable more to measurement of the heat degree than to the cause of its production, and with it the interpretation of its relation to effects. Yes, it is difficult to make one consideration subordinate to the other. Let it be confessed at once that intensity and amount of fuel have the most to do with results, while the thermometer but measures the force, mayhap the intensity, of the flame. Again, as an inconsequential deduction, so-styled peaks of temperature may not, after all, constitute a range, nor need they be impressed into service as illustrative of the law of gradualism and sudden upheaval.

Evidently, disturbances of temperature mean something and are explicable from a chemical standpoint. Physically, what is a man but a walking laboratory, with inevitable heat-producing capacity? What but a singular compound of the organic and inorganic; a sum of compromises between an atomic point and a sweeping periphery? What but a divided compass in motion?

To say that the duration of temperature is a factor in the prognosis is but an awkward begging of the question, a

species of prophecy looking backwards or a conformation in the light of after events. Therefore a temperature of  $105^{\circ}$  or  $106^{\circ}$  Fahr. as a climax must of necessity, but not inevitably, find a place in the last act of the drama. It is an incident not at all of intrinsic value, or at least not markedly so, as to the history of the case. There may be a sudden death in the very heat of battle; for somehow, the lower physical forces may have failed to attain the new and higher forms, since, somehow, there has been a waste,—the coal has failed to make steam; the waterfall, electricity. Yet not infrequently, even from the quoted temperatures of  $105^{\circ}$  and  $106^{\circ}$  Fahr., there have been rallies to complete recovery. Thus every law is baffled.

In this matter of body temperature, there is, although assuredly there should not be, much confusion. Perhaps there is somewhat more than the requisite modicum of elaboration. Perhaps there has been too much strife to rid of the explanation of combustion or the affinity of gases. Perhaps there have passed unobserved the identity of heat with motion and its conduction as a magnetic force; perhaps, too, its capacity for radiation, absorption, and expansion. Its intensification and its obliteration by the removal of inflammable material have been relegated to the rear.

Mussers, in the lead of some of the older authorities, attributes the stability of temperature to the central regulating apparatus, called the thermotoxic apparatus, which controls the production and dissipation of heat. This aggregation of forces is under control of the nervous system, either through the motor or special nerves which pass with them to and from definite centres in the brain called heat centres. He claims that the fever is due to the increased disintegration of nitrogenous tissue. Of this ascription, it may be said that every iota is true enough, but why should the dictum be so elaborated? Why not fall back upon the old-style statement of interchange of elements, which will comprehend all the essentials of combustion? Hippocrates with a very long line of followers made heat and fever interchangeable

terms, and even yet the tautological term of "burning-fever" is by no means obsolete, both adjective and noun, in fact, seldom parting company. Again, may it not be as justly claimed that the temperature phenomenon is due to the appropriation of oxygen, which has been characterised as "an electric or magnetic bearer with a varying tension"? But let the quibble rest with the causist, for science is already rich enough in explanations. As has been intimated, a high temperature is not *per se* a menace of danger, much less the stop signal of the track-walker. Its continuance and stage of appearance are of importance as exciters of our fears. Thus a temperature of 106° Fahr., on the second or third day of a catarrhal pneumonia, is not as grave a manifestation as one of 105° Fahr., on the second or third week of typhoid fever. Lebert of Breslau is even somewhat optimistic, particularly as regards relapsing fever, over such temperatures as 105.8° and 107.6° Fahr. Dalosta records a recovery as crowning an axillary temperature of 110° Fahr. in a case of his own, that of a cerebral rheumatism. Teal is quoted as authority for a range for days of between 112° and 114° Fahr. in a case of injury to the spine, the patient also recovering. These are individual instances, which but for the probity and care of the observers might not pass unchallenged.

Complications may likewise be augured from temperature, particularly from the subnormal indices, as in the shock of purulent formations, when a fatal termination is imminent. This statement as regards results seems to be truer of the subnormal than of the supra-normal lines, while the most puzzling of our observations are to be met with in uraemic intoxication and acute tuberculosis, as made manifest by the diversity and irregularity of the curves. Then also the environments may prove to be calorific in their character and serve to modify the prognosis, as in the malarial and those fevers dependent upon a mixed infection. These are to be explained as the continuation of the producing causes. For instance, in a marshy region with a prevalent moist climate, where, owing to the superior affinity of the decom-



posing vegetable matter for the oxygen, the air has become devitalised, there is not much wonderment regarding temperatures. As a medical friend once expressed it, as germane to a continuous high range, "more poison is taken in than is gotten rid of"; or, to give a bacteriological zest to his phrase, the microbes are in competition with the corpuscles of the blood, the interchange of conditions being perfect. There is, accordingly, a constant element in the production of results, a constant twanging and a constant vibration. In this class of cases, there is not much apprehension of destruction, because the power is measured and the rhythm perfect. There are no interruptions and in very truth no terrors.

Still, continuation should not bewilder, for temperature remaining at its acme for several days denotes the gravity of the case, because here there is both pressure and tension. Why should not a catastrophe be foreboded along with some mutterings of an overcharge of the nerve centres? Why, as the logical sequence proceeds, should it not be explained that a reduction of the red corpuscles was tantamount to a reduction of the nerve force? But what boots all this, when the measure of the pressure is read, and with it the doom of the sufferer? Had it not much better be said, that even in disease there are fixed laws, but that the interpretation is obscure? So far, account has only been taken of supra-normal temperatures, with reference to nutritive determinations, but the reverse conditions have still to be considered. The grave anxieties begin in reality with the depressing maladies or such as those which have an inimical modifying influence upon the nerve centres. It may be premised, that in all morbid tendencies the excitability of the organ must be increased before the function of activity is lost. But this cannot indefinitely run a linear course, unless the velocity be rapidly expended, since it is a law of neither the visible nor of the invisible world. The advance is zigzag rather than direct.

The received statements seem to be that an initial low

temperature, typically  $96.5^{\circ}$  Fahr., is the rule in shock, apoplexy, cancer, starvation, myxoedema, diabetes, tubercular peritonitis, thrombosis, cholera, and pulmonary embolism. In the prognosis of all these, there are no embarrassments; the finale, though long deferred, is sure to have a dark, gloomy spectrum. The fire is low and smouldering. Where the combustion—the term is advisedly used—is certain and thorough, typifying molecular death, as, for example, in chronic abscesses of the brain with its gamut range from irritability to delirium, the scaling has gentle slopes and curves long arcs. Here the disappearance of cerebral and spinal reflexes are the croonings of the seer. The question of death in all these instances divides itself into the consideration of oxygen supply, the alkalinity of the blood, and the elimination of waste. To amplify, is it not better to say that the absorbed oxygen in the lungs for eventual conveyance to the tissues, the necessity of an alkaline reaction for oxidation, and the disposal of waste in semi-solid or liquid form, lie at the root of animal life? All these functional processes manifest themselves by a heat point established by Breschet and Becquerel in 1835 at  $98.5^{\circ}$  Fahr., which fact was subsequently proclaimed in 1851 with added *éclat* by Wunderlich, Barensprung, and Traube. But even this temperature, whose office ought to be one of consolation, has its disappointing fallacies.

The exceptions to which attention is to be directed are those instances where pus is encapsulated in large receptacles and rendered proof against absorption. Here is a volcano which bursts its barriers at last and explodes in a shock. How often has the phenomenon been observed in empyema and chronic peritonitis! Here, the mental calm, thread-like pulse and cold, moist surfaces proclaim the worthlessness of all office. Perchance the amount of urea excreted might give a better clew to a more available prognosis, but even thus, the limit of division cannot be safely written in weeks, much less in days. There is now a presage which all will admit it is not wise to utter, lest the prophet be without honour.

Thus far, temperature has been discussed apart from circulation and respiration, the main reliances of our predecessors. No purpose to belittle their value as prognostic means has been intended; but to vary the phrase, let the need of superior precision be accorded to the readings of the thermometer. Both of the functions mentioned are converters of force and deserving of especial consideration, but the danger of prolixity is to be avoided, despite the alluring temptations. The scheme of the pulse, capable as it is of nearly mathematical expression and fortified against overmuch error by the "*tactus eruditus*" and later by the sphygmograph, still, and with justice, has its advocates. The forces of the circulation and the respiration are both capable of measurement more or less exact. So also the variable forms of the microbe are capable of isolation, but the degree of nicety resident in the heat-gauge is wanting. The whole subject of nutrition might be touched upon, the constituents of the blood with its rôle as purveyor to the tissues and its duty as a waste-carrier,—all these might furnish topics sufficient for a treatise, but, for the present, other considerations come into play as limits, both as regards time and inclination. In brief, may it not at least be said tritely but truly, that the application of thermometry to the scaling of symptoms is one of the most important discoveries within the realm of medicine? From the thermometric record there can be no appeal; its judgment is final, and there but remains to science the profit of its lessons.

Observant sensations on the part of the patient may interfere with correct descriptions, as, for instance, heat may be complained of in collapse, but the clinical thermometer is the sole adjudicator. In doubtful cases, it were well to compare the central with the peripheral heat, being cognisant of the fact that even during chill the temperature may arise and forecast the peripheral cooling of the body.

What, then, not to delay the hearer, who is besought to regard the paper as suggestive rather than final, may be regarded as fair conclusions? Let them be stated as follows:

1. High temperatures are not as uniformly fatal in their tendencies as the low.

2. High temperatures short in duration are simply indicative of an acute invasion, or due to an insignificant disturbance.

3. The subnormal temperature presages, as a rule and almost invariably, death.

4. Above all, the problems of waste and supply are to be considered in the light of sex, age, temperament, and environments.

6. The greatest disappointments are the rule in the condition of collapse.



## THE MEDICAL TREATMENT OF INEBRIETY.

By T. D. CROTHERS, M. D., of Hartford, Conn.

*October 14, 1896.*

Inebriety is a more complex disease than insanity. Its progressive degeneration often dates back to ancestors, to defects of growth, retarded development, and early physical and psychical injuries.

Later, the poison of alcohol, by its anaesthetic and paralyzing action, develops more complex states of degeneration, the form and direction of which are very largely dependent on conditions of living and surroundings.

The psychical symptoms show progressive disease of the higher brain centres, both masked and open, with degrees of palsy and lowered vitality.

In insanity, many definite pathologic conditions are traceable. In inebriety, a wider, more complex range of causes appear, the line of march of which is often traceable in more general laws of dissolution. Its medical treatment must be based on some clear idea of what inebriety is, and the conditions present in the case to be treated.

This requires a careful clinical study of the symptoms, tracing them back to causes, and all the varied conditions formative in the progress of the case.

In such a study, heredity appears as the most frequent early predisposing cause.

The question then is, What conditions of life have been most active in developing these inherited tendencies? How can these conditions be checked and prevented? What means and methods are possible in the rational treatment?

The second class of cases most commonly noted are those due to physical causes. These are the physical and mental

strains and drains, also injuries both physical and psychical. The remedies here are distinct, and the means to build up and restore these defects call for therapeutic skill and judgment. A third class of inebriates seem to be due to especially psychical causes, of which mental contagion of individuals, of conditions and surroundings are most prominent.

Here another class of remedies and therapeutic measures are required. These classes are often combined, and the various causes are blended, requiring more accurate study to determine the leading factors in each case. These are conditions which provoke the early use of alcohol, and give form and direction to the progress of the case.

The second part of the clinical study of inebriety is the effect of alcohol. What injury has it caused? How far has it intensified all previous degenerations, and formed new pathological conditions and sources of dissolution? Also, what organs have apparently suffered most seriously from the drink impulse? And, most important of all, how far is the use of alcohol a symptom or an active cause?

Having ascertained these facts, the medical treatment is the same as in other diseases, the removal of the exciting and predisposing causes, and building up the body.

The first question is the sudden or rapid removal of alcohol. If the patient is alarmed, and intensely in earnest to abstain, he will consent to have the spirits removed at once. If he is uncertain, and has delusions of the power of alcohol to sustain life, the withdrawal should depend on circumstances. The removal of all spirits at the beginning of the treatment is always followed by the best results. The reaction which follows can usually be neutralised by nitrate of strychnia, one-twentieth of a grain every four hours, combined with some acid preparation. Soda bromide, in fifty or one hundred grain doses, every three or four hours, will break up the insomnia, and cause sleep the first two nights.

The withdrawal of spirits should always be followed by a calomel or a saline purge, and a prolonged hot-air or hot-water bath, followed by vigorous massage. Hot milk, hot

beef tea, and in some cases hot coffee, are very effectual. If the patient persists in a gradual reduction of the spirits, strychnia, one-twentieth of a grain, should be given every two hours. The purge and hot bath should be given every day while the spirits are used. The form of spirits should be changed from the stronger liquors to wines and beers. Some of the medicated wines are useful at this time, or spirits served up in hot milk. There is no danger of delirium from the withdrawal of spirits, particularly where baths and purging are used freely. The two conditions to be treated at this time are poisoning and starvation. The system is saturated with ptomaines from alcohol, and suffers from defective digestion. The nutrition is impaired, and organic growth retarded. Saline or calomel purges, with baths, meet the first condition; foods and tonics, the second. Not unfrequently, the withdrawal of spirits reveals degrees of brain irritation and exhaustion that are practically manias and deliriums, or dementia and melancholia. The essential treatment is to regulate the nutrition and elimination, then arsenic, strychnine, phosphates, and iron will comprise the chief remedies that are found most useful.

Many of the chronic cases of inebriety reveal dementia when spirits are removed; others show well-marked paresis, or tuberculosis. Symptoms which were attributed to the action of alcohol are found to be due to previous degenerations. In one case, the demented talk and conduct while using spirits burst into marked dementia when the drug was withdrawn. In another case, the wild, extravagant conduct of the inebriate appears in paresis, when free from spirits.

The removal of alcohol is often followed by tuberculosis, not suspected before, which apparently starts from some trivial cause, and goes on rapidly to a fatal termination.

Rheumatism and neuritis are forms of disease which frequently appear after the withdrawal of spirits. Diseases of digestion are common, also diseases of the kidneys. The latter are usually masked, and burst into great activity when alcohol is removed.

These, and many other organic diseases, suddenly come into view, and whether they have existed, concealed by the anaesthetic action of alcohol, or have started up from the favouring conditions of degeneration caused by spirits, are not known. The therapeutic requirements must reach out to meet all these unsuspected disease states, which may appear at any time.

The removal of spirits in all cases reveals conditions of both physical and psychical degeneration that call for a great variety of therapeutic measures.

The next question is to ascertain the special exciting causes, and remove or build up against them. In the periodic cases, the early favouring causes of the drink storm are often reflex irritations from disordered nutrition, exhaustion, and excessive drains or strains. Later, a certain tendency is formed for explosions of deranged nerve energy in alcoholic impulses for relief. This periodicity is often due to causes which can be studied and prevented by remedial measures. In certain cases, nutrient and sexual excesses are followed by a drink storm. In another, exposure to malarious influences, where the disease has existed for a long time before, brings on the craze for drink. In other cases, constipation, overwork, neglect of hygienic care of the body, irregularities of food and sleep, emotional excitements or depressions, are followed by an alcoholic craze. A vast range of psychical causes has been noted. Thus, a residence on the seashore or in high altitudes, on mountains, provokes this thirst for spirits, and removal to higher or lower planes is followed by a subsidence of it.

Many persons never use spirits except in large cities, or at special exciting gatherings, or on holidays and festive occasions.

Here evidently some defect of the brain exists, either organic or functional, which should be reached therapeutically.

Literally, many of these cases have been cured by change of surroundings as well as medicines.



While the ostensible object of medication is to stop the drink craze, this is as far from being curative as the suppression of pain by a dose of opium.

Conditions which cause the disordered nerve force to concentrate in cravings for the anaesthesia of spirits, are to be neutralised and prevented before a cure can be expected.

The use of narcotics and drugs to check the desire for spirits at the beginning is temporary and always uncertain. Opium, chloral, and cocaine given freely at this time, often simply change the drink craze for these drugs, which are used in the place of spirits ever after.

The return of the drink impulse at regular or irregular intervals is in most cases preceded by premonitory symptoms, which enable the physician to use preventive remedies. In certain cases, calomel and saline cathartics, with prolonged baths, rest, or exercise, according to the requirements of the case, have been found curative.

Various cinchonia tonics, free from spirits, and iron preparations are often useful. Large doses of strychnine seem more valuable after the full development of the morbid impulse, given when spirits are discontinued. Some of the various coca compounds on the market have had a strong influence in breaking up the drink storm.

In a certain number of cases, patients are unconscious of the approach of the drink storm, and are difficult to treat. But when they realise its coming and seek assistance, the task is easier. The general principle of treatment is sharp elimination through all the excretory organs, and the use of mineral tonics, changes of diet and living; particularly a study of the exciting and predisposing causes, and their removal. When the drink paroxysm has passed away, then radical constitutional remedies are to be used. The history of syphilis calls for mercury, arsenic, and potassium. Defective nutrition requires a study of the diet best suited to build up the tissues.

Entailments from other diseases, as malaria, rheumatism, and various neurotic affections, require appropriate remedies.

Tinctures of any form are dangerous. The susceptibility to alcohol is so great that the smallest quantity is felt, although it may not be recognised.

Where spirits are taken continuously, the system is always depressed, all functional activity lowered, and literal palsy and starvation are present.

The removal of alcohol is only a small part of the treatment. The demand for alcohol is a symptom of this progressive degeneration. Giving remedies to produce disgust for the taste of spirits, or to break up the cravings for it, are not curative. Apomorphia, mixtures of atrophia, hydrastine, and a great variety of allied remedies, are all dangerous; while apparently breaking up a symptom of the disease present, they often literally increase the degeneration by their irritant narcotic properties and further depressing action on the organism. The indiscriminate use of these, and allied drugs, in the various specifics for inebriety, is the most dangerous empiricism. It is the same as opium or other narcotics for pain in all cases, irrespective of all conditions, and calling the subsidence of the pain a cure. Thus, in the following cases, a periodic, after a gold-cure treatment, developed into acute dementia, which ended fatally. In others, epilepsy, acute mania, pneumonia, rheumatism, nephritis, followed from the chemical suppression of the drink impulse. In all probability, the narcotics used were active, contributing causes to the particular organic diseases which followed.

The masked character of inebriety makes it dangerous to use narcotics beyond a certain narrow limit. Cases which have been subjected to active drug treatment, to suppress the desire for spirits, are feebler and more debilitated than others. Those who have taken the so-called specifics are marked examples, and whether they use spirits again or not, are always enfeebled and pronounced neurotics.

In all these cases there is so wide a range of causes and conditions that specific routine treatment is impossible.

*Strychnine* has recently come into some prominence, and is a useful, valuable drug. In some cases, where the spirits

are withdrawn, its action is pronounced as both a tonic and stimulant. Given in 1-30-grain doses four times a day, for a few days at a time, then discontinued, or given in larger doses for a shorter time, the results are usually good.

In some cases, certain susceptibilities to the action of strychnia are noticeable, and where the drug is taken to prevent the drink attack, it sometimes rouses it, seemingly precipitating the condition which it is supposed to prevent. This is often anticipated in the muscular tremors and nerve twitchings that evidently come from strychnia, when used even in small doses.

Strychnia should never be given alone, except immediately after the withdrawal of spirits. At other times, combined with cinchonia or other vegetable tonics, it is an excellent tonic. Care should be used to watch its effects on the motor nerves, and be sure that the patient is not unusually sensitive to it. Belladonna, atrophia, cannabis indica, hyoscyamus, and drugs of this class have a limited value, and should be used with great caution in states of irritation following the withdrawal of spirits. They are best given in combination with other drugs for a brief time and in particular cases. The bromides are valuable in the same way, and in the same conditions, only in much larger doses than mentioned in the text-books. From 50 to 100 grains to a dose are requisite, always accompanied with baths, and never continued more than two or three days. Coal-tar preparations are of uncertain value as narcotics, but may be used in certain cases with good results.

The various mineral and vegetable acids are almost indispensable in selected cases, and often can be given a long time as tonics.

In the treatment of cases, after the paroxysm is over, frequent changes of the form of the tonics are most valuable. Iron, phosphorus, arsenic, potassa, and bitter vegetable tonics should be alternated with free intervals, for periods of months. The various derangements of the system should be watched and treated with appropriate remedies, and every

case should be constantly under medical care. The facts of the case having been studied, the question of where the medical treatment can be applied to the best advantage must be determined from the case and its surroundings.

If at home, the physician must have full control, and his directions be carried out implicitly. When the drink paroxysm appears, the course of treatment must be prompt and exact. In one case, the patient goes to bed, and is secluded from all sources of excitement; in another, he is sent away to the country, and among strangers; in a third case, a few days' residence in a hospital or asylum under the care of a physician is sufficient. Hospital treatment, with its exact care and physical and psychical remedies continued for a long time, give the strongest promise of permanent restoration. Wisely adapted medical treatment, based on a careful study of each case, makes it possible for the family physician to treat these cases, in the early stages, with success.

No single remedy is capable of meeting a wider range of conditions than the Turkish or hot-air baths, with free massage. Next to this are hot and cold showers, and hot packs with free rubbing. Bitter tonics and salines, with regulated diet, are next in importance. Elimination through the bowels, kidneys, and skin freely, are always essential. Beyond this, the good judgment of physicians should determine when to give narcotics, and when to abandon them, always remembering their danger and very uncertain temporary action; also, that the cessation of the drink craze is only temporary. If this is accomplished by drug and chemical restraint, the permanency is very doubtful.

The subsidence of the drink symptom by the removal of the exciting causes, and building up the system to greater vigour and health, is the only rational treatment. In this, the highest medical judgment possible and the greatest therapeutic skill are essential for success. The medical judgment, which will determine the exact condition in each case, and the possible range of remedies required, not any one drug or combination of drugs, not so-called moral remedies or



appeals to the will power, but a clear, broad, scientific application of every rational means and measure, are demanded. A large number of these unfortunate cases are distinctly curable in the early stages, and later, when chronic conditions come on, the possibility of cure continues to a far greater degree than is commonly supposed.

It is the common observation of every one that a certain number of cases recover from the apparent application of the crudest empirical remedies and psychical agencies used in the most unskilful way. This fact furnishes the strongest possible reasons for believing that when inebriety shall be studied and treated as a disease more generally by the profession, a degree of curability will be attained far beyond any present expectation. The present empirical stage of treatment should rouse a greater interest and bring the medical treatment of inebriety into every-day practice. Then the family physician, and not the clergyman and quack, should be called in to advise.

A new realm of medical practice is at our doors, only awaiting medical study above all theory, and exclusively from the scientific side.

## FURTHER REMARKS ON THE DOMESTIC TEST FOR ALBUMEN IN URINE.

By J. G. TRUAX, M. D., of New York County.

*Read by title, October 14, 1896.*

About one year ago, the writer read a paper, describing what was, to him, a new method for detecting albumen in urine.

During the reading of the paper, different tests were made in your presence, to show the superiority of the one under consideration. At that time, mucin gave us some trouble, and control tests were necessary to eliminate any doubt, alcohol coagulating both serum, albumen, and mucin.

Since that time, the writer has discovered the fact that alcohol, reduced by the addition of water to below seventy per cent., will not coagulate mucin, and will coagulate albumen when not above fifty per cent. Thus, it may be seen that we have the control always at hand. Another year's experience has added to the value of the test in my hands.

The writer will again describe the method, for the benefit of those who were not present at the last meeting of the association.

There are two ways of making the test. The first, and, to me, the best, is made by filling the test-tube with urine to the height of an inch or more, upon this pouring carefully a drachm of alcohol; if albumen be present, a white ring will form at the point of contact of urine and alcohol.

The second method is to pour alcohol into the test-tube, and drop into it a few drops of urine; if albumen be present, a white line of coagulum will follow the urine, as it sinks to the bottom of the tube, and in a little while the mixture will become cloudy. These are the most sensitive tests known to the writer.

## THE SURGICAL RELIEF OF OBSTRUCTION OF THE COMMON DUCT BY BILIARY CALCULI.

By H. O. MARCY, M. D., of Boston, Mass.

*October 14, 1896.*

In 1870, it was my fortune to care for one of the most intelligent of physicians, who was suffering with an intermittent form of biliary obstruction, resulting, as he believed, from a calculus. He often discussed the feasibility of surgical relief, and emphasis was made upon the belief that measures should be devised by which the foreign body could be safely removed. In fulfilment of a promise given him, I examined the body after death, and have now in my possession the obstructing calculus.

The clinical history of this patient is of practical interest. His suffering was intermittent; at times there was a marked icterus, followed by periods of comparative relief. He occasionally had bloody vomiting, and much of his suffering was referable to the digestive tract. The immediate cause of death was haemorrhage from the stomach. There was found a number of infractions in the mucous membrane of this organ, as also a marked stenosis of the duodenum, caused by cicatricial contraction.

It is believed that these pathological conditions were dependent upon secondary changes incident to icteric poisoning, since only at the times of biliary obstruction did he have marked attacks of continued nausea and vomiting.

A few years later, another intimate friend suffered, at times severely, from biliary obstruction, and often declared that she could determine with precision the location of the *something* that caused her attacks, and the dislodgment of this something, followed by speedy relief. These attacks became more frequent and severe, when the subject of surgical inter-

ference was discussed with the late Dr. C. Ellis of Boston, one of the wisest of clinical teachers. The gall-bladder was not especially enlarged, and the obstruction was believed to be in the common duct, almost without question a calculus. Operation was decided against, since surgical exploration of the common duct was at that time believed impossible. Later, the autopsy confirmed the diagnosis, and a careful anatomical study of the conditions found taught me to believe that a surgical operation might have been performed, the offending calculus removed, and the parts closed with a reasonable expectation of recovery. Here, as in the first case, the icteric condition had been intermittent for a period of some years, and when relief from the obstructive conditions was obtained, the patient would remain for several months in a condition of health, nutrition good, and her general vigour not impaired.

Post-mortem conditions were instructive, in that the gall-bladder was small, somewhat contracted, the hepatic structures not particularly changed, the obstruction having been caused by a gall-stone measuring one third of an inch in diameter, lying in the common duct. The stone was movable; the mucosa of the duct was eroded with slightly bleeding walls, apparently caused by recent pressure.

There had evidently been considerable play of movement of the calculus in the dilated duct, perhaps explaining, in a measure, the intermittent symptoms of biliary obstruction. The fatal attack lasted some days, and, as in the former case, the nausea and vomiting were persistent, and, toward the end, a very considerable quantity of fresh blood in the vomitus was believed to have hastened the fatal issue. The mucous membrane toward the pyloric orifice was broken, with several small, bleeding vessels.

In 1882, a second case came under my observation. A woman in middle life, previously in excellent health, was suddenly seized with seeming complete biliary obstruction, with forecasting of a probable fatal issue. Repeated consultations were held, in which surgical interference was



discussed, with her former physician, Dr. Z. Adams, of Framingham, and the late Drs. Ellis and Bowditch, of Boston. The probable diagnosis was biliary obstruction of the common duct, caused by a calculus, with the possibility of malignant disease.

I advised an exploratory incision, which was warmly supported by Dr. Bowditch, but was as strenuously objected to by Drs. Adams and Ellis. An adverse decision was rendered by the friends, who intelligently inquired as to the history of such operations, especially when I informed them that to the best of my knowledge no attempt at surgical relief for biliary obstruction in the common duct had ever been made. The autopsy, about two weeks later, showed a gall-stone impacted in the common duct, with a disorganised liver, as the cause of death. A careful study of the conditions confirmed my conclusions arrived at in the former case, that it would have been practicable to have removed the calculus, with a fair prospect of subsequent recovery. I then determined that such experience should find fruitage in definite action.

In 1884, Dr. W., of Vermont, a physician of exceptional intelligence, sent for me. He had suffered for a number of years from more or less severe attacks of biliary colic, which he thought were due to an obstruction of the common duct by a gall-stone. Through his thin, relaxed abdominal wall, he believed at times he could differentiate a foreign body, which was movable, and which often acted as a valvular wedge, causing obstruction of the common duct. When these attacks came on, the gall-bladder would become distended, as a small, tense, painful tumor, followed by jaundice, which after a time would subside with a retrocession of the obstructing mass, and a relief of his biliary suffering. The last attack continued much longer than usual, and the doctor himself believed it would result in a fatal issue unless in some way speedy relief could be given. As a consequence, I was summoned. The patient had been unable to sit up for some days; vomiting more or less constant, emaciation

extreme, and the patient was evidently in immediate danger. There was much pain and tenderness at the base of the liver, and just to the right of the median line a small, ill-defined mass could be felt, which the doctor emphasised as the location of his obstruction.

An incision was made, parallel to the lower rib; the base of the liver was easily found, and a rather small, undistended gall-bladder was exposed, which was intimately bound to the transverse colon by old, firm, vascular adhesions. The incision was extended toward the median line, but adhesions were everywhere encountered, and a further dissection was reluctantly abandoned. A small calculus could be felt in the common duct, which was dislodged by the finger and pushed upward into the gall-bladder. It could have been removed through an incision made into the latter, but it had not then occurred to me to close such an incision by means of buried sutures, and the adhesions of the gall-bladder to the parts about rendered it impossible to attach an opening made in it to the pariaetal peritoneum for drainage. I therefore reluctantly abandoned further effort for its removal, and closed the abdominal wound without drainage. Immediate recovery, followed with primary union and a marked relief of his obstructive symptoms. However, after a period, these returned with all their former severity, soon followed by death.

A careful autopsy was made by the late Professor Frost, of Hanover, N. H., who reported that a calculus about the size of a walnut was in the greatly dilated common duct, producing complete occlusion. Although the hepatic structure was not materially changed, yet the old adhesions binding the gall-bladder to the transverse colon were so extensive that the post-mortem dissection was made with difficulty, and, on this account, further operative measures would have been, in Dr. Frost's judgment, unjustifiable.

CASE V.—Mrs. P., aged forty, had had several attacks of biliary colic of a serious character, accompanied with jaundice. The last attack preceding the operation occurred in August, 1889. Life at

that time was thought imperilled, and she had not been quite well since. Entered my private hospital in October. Had severe local pains, some vomiting, markedly jaundiced; dark urine, clay-coloured stools. Thick abdominal wall, beneath which a considerable sized fluctuating tumor was well defined, the base of which extended quite on the line with the umbilicus. Operation, October 26, 1889, assisted by Drs. Clark and Nelson.

Immediately upon my dividing the peritonaeum, the cystic growth distended the lips of the wound. It was attached to the peritonaeum by a double row of tendon sutures, and incised. Ten ounces of thin, light-coloured bile escaped, floating out with it a gall-stone, the size of a large almond.

Since it was apparent that biliary obstruction could not result from a large stone floating in a dilated gall-bladder, further operative measures were necessitated. Careful probing revealed the presence of another calculus, situated deeply toward the median line, quite beyond the cystic duct. A free flow of bile continued through the opening in the gall-bladder, showing that the hepatic duct was not occluded. All effort at dislodgement failed, and as much force as was deemed justifiable was used in the attempt to crush it, by pressure upon the walls of the duct, but without avail. With long, slender forceps I could obtain an imperfect hold upon the calculus, and with the blunt uterine curette could partially rotate it.

The bladder was washed out with a sublimate solution, the stitches cut away, the wound packed with sponges, after having somewhat forcibly drawn the gall-bladder through it. Even this procedure did not enable us to seize and remove the calculus. I then divided the walls of the common duct with scissors, and everted its edges from over the roughened calculus, which was even then removed with difficulty. Further probing demonstrated not alone that there were no more calculi, but after delicate manipulation, the probe passed easily some inches beyond, into the intestine.

It now became a question of importance how to close this long, deep opening. The abdominal cavity had been shut off by sponge packing, and fortunately kept entirely clean. The operative field was much more accessible than had been deemed possible. The incision had been extended nearly to the median line, about five inches in length. The dilated duct was quite the size of the little finger, its walls much thickened. With a full-curved needle, threaded with a carefully selected tendon suture, I united the divided edges of the thickened mucous membrane of the duct and

gall-bladder by a continuous suture. This was followed by another layer of continuous suturing, carefully coaptating the peritoneal edges, while over all a third layer of tendon sutures was applied, the stitches taken parallel to the long axis of the wound through the peritoneum, about three lines from the cut edges, each succeeding stitch entering exactly opposite to the emergence of the preceding one. Tension upon this suture not alone buried it, but also intrafolded the uninjured peritoneum with exact coaptation.

The wound through the common duct and gall-bladder thus closed, measured four inches. The sponge packing was now removed, and a careful examination showed that the contiguous deeper structures were uninjured. The peritoneum was then closed with a continuous double tendon suture, and the sundered muscular structures similarly in separate layers.

The skin was also coaptated by a layer of buried tendon sutures, and the wound sealed with iodoform collodion. Of course, this method of closure does not permit of drainage. It is the method, however, which I have advocated and practised in the closure of all aseptic abdominal wounds for many years. Rapid convalescence ensued without incident. The rough, mulberry-looking calculus, grape-size, was the offending member, and weighed, when dried, fifty-nine grains.

These preceding histories were much more briefly reported and published in a contribution entitled, "Surgical Relief for Biliary Obstruction," read before the surgical section of the American Medical Association at Nashville, in May, 1890. I now believe, as I indeed supposed then, that I was the first to operate for the removal of a calculus situated in the common duct. I have reported these early studies in greater detail, since they inaugurate the initiation of operative measures for the relief of a class of dangerous conditions, hitherto supposed to be beyond the limit of surgery. My subsequent experience justifies the opinion expressed six years ago, that, in suitably selected cases, an operation was not only admissible, but mandatory. I take pleasure in referring to a valuable contribution upon this subject by Dr. Fenger, of Chicago,<sup>1</sup> and also to correct his mistake in accrediting the

<sup>1</sup> "Stones in the Common Duct, and Their Surgical Treatment."



first operation for the removal of a gall-stone from the common duct to Courvoisier, who performed his first operation January 22, 1890. The operation is necessarily one of difficulty, occupying considerable time, and must be conducted with modern aseptic care.

The experience of a considerable number of operators has demonstrated its utility, and I trust for it a permanent place in surgery.

#### DISCUSSION.

In answer to questions regarding the best location for the incision, and whether, in his experience, a chill had been a frequent or constant symptom of biliary obstruction, Dr. Marcy replied that only a few days ago his attention had been called in the hospital to an operation undertaken for supposed appendicitis. It was found, however, that the gall-bladder was the part involved, and accordingly, the incision had been extended obliquely upward. He thought the best incision was one made about parallel to the lower rib, and somewhat crescentic in shape. There were, however, certain conditions of the gall-bladder demanding operation, which might be well met in cases in which a median incision had been employed for other purposes. He had noticed a chill in a number of instances, but did not consider it pathognomic of the condition.

DR. DIDAMA, of Onondaga county, said that he had seen Dr. Marcy perform one of these operations. Some might think that Dr. Sims suggested this operation, but he advocated opening the gall-bladder, and taking out gall-stones, an operation which is decidedly easier than opening the common duct and taking out calculi. Moreover, Dr. Sims's operation led to other abdominal operations which had not been heretofore undertaken.

## A PLASTER-BANDAGE CUTTER.

By SIDNEY YANKAUER, M. D., of New York County.

*October 14, 1896.*

It is with a good deal of hesitation that I venture to lay before an unsuspecting medical profession, an addition to the already long list of instruments for cutting plaster-of-Paris bandages. To be successful in devising such an instrument, we must be careful to obey the fundamental axiom of invention; that is, to consider all the chemical, mechanical, and physical properties, both of the material to be worked upon, and of the material which is to do the work.

A plaster bandage, then, consists of three parts:

1. The plaster, a hard, brittle material, inelastic and unpliant, but easily pulverised. The powdered particles have such adhesiveness that they are readily compressed into a solid mass.

2. Throughout the mass of the plaster are situated fibres of cotton (the "crinoline" which forms the basis of the plaster bandage) disposed in layers parallel to the surface of the bandage. In each layer, the fibres run in two directions, at right angles to each other. Wherever a turn or reverse is necessary in applying the bandage, these fibres are bunched up into masses, in which the fibres run in all directions.

The third part of the bandage is the layer of soft material underneath, such as a flannel roller.

The instruments which have been devised to cut plaster bandages may be divided into three groups:

1. Those based on the principle of a knife. A knife is a wedge, and in cutting a substance penetrates it and separates its particles; hence, the substance must be pliable or soft. The degree of hardness of plaster of Paris is such that

a knife can penetrate to a short distance only. Hence, in cutting such a substance repeated strokes must be made, each time taking off a small piece. The knife, therefore, is suitable for our purpose, but works slowly. Soft material, like flannel fabric, etc., can be cut by a knife under three conditions: It must be enclosed in, or lie upon, a hard substance, or must be stretched.

2. Instruments based on the principle of a saw. Saws are of two kinds, "rip" saws and "cross-cut" saws. A "rip" saw consists of a series of chisels whose cutting edges are at right angles with the line of incision. They would cut those fibres of a plaster bandage which are parallel to the line of incision, but not those which cross it. A "cross-cut" saw consists of a series of knives, which would cut the transverse fibres; but the teeth are arranged in two rows which cut the borders of the incision, while the centre remains uncut and must be crushed or broken by the body of the teeth. Longitudinal fibres in the line of incision would not be cut at all. Furthermore, the debris formed by a saw falls into the angular space between the teeth and is soon compressed there into a hard mass. This is "clogging" of the saw, which very soon interferes with its cutting qualities.

3. The shears are not cutting instruments; they are crushing instruments. As the blades are not opposite each other, but alongside of each other, there exists a free space corresponding to each blade. In order to cut material with the shears, the force applied to one blade is transmitted to the other side of the material, where the particles are forced into the free space. The elasticity and pliability of the material must be such that the force accumulated can become sufficient to overcome the cohesion of the material. Now, plaster of Paris is so hard and unpliant and inelastic that the shears are entirely unsuitable for cutting it, unless the greatest force be applied. For the soft material of the bandage, however, the shears are eminently suitable.

Hence, we see that to economise our forces, the plaster must be cut with a knife, the soft material with the shears or

knife. For our composite material, the knife alone is suitable.

I have arranged a series of knives on a number of circular steel disks, in such a manner that the blades form combinations or sets; the blades on the central plate or disk are straight, those on the outer plates are curved inwards toward the central plate. By this arrangement, we have knife-edges situated in such direction that they cut all the fibres. The sets are so arranged that they form a wedge, the central blade at the angle of the wedge; and the motion of the rotating disks is in such direction that the central blade cuts first, then the lateral blades, the debris falling into the wedge. On account of this direction of rotation, the debris is not forced into the angle of the wedge, as in a saw, but the instrument, so to say, rotates away from the debris. Hence the instrument does not clog. Besides, there is considerable space between the blades, so that the debris falls out easily.

Underneath the circular cutter is a long "foot," perforated by a longitudinal slot, into which the circumference of the cutter sets. The foot is inserted between the skin and the soft material under the plaster bandage. This soft material is stretched over the sides of the slot and is quickly cut by the rotating knives as the instrument advances.

The motion is produced by an electro-motor, and is transmitted to the cutter by a flexible shaft.

With this apparatus, I have succeeded in cutting hard, dry plaster bandage, nowhere thinner than a quarter of an inch, at the rate of a foot a minute.

On account of the necessity of having an electric motor, the apparatus is expensive and cumbersome; it will be my endeavour to improve upon its present form, so that it can be worked by hand, be small in bulk, and readily transportable.



## A NEW MICROTOME.

By SIDNEY YANKAUER, M. D., of New York County.

*October 14, 1896.*

I call this instrument a *new* microtome, because it is not a modification of any older instrument, but is constructed on new principles. I will show you the original working model, which is crudely constructed, but with which some good work has been done.

The apparatus consists of two parts,—a base, and a movable part shaped like the letter T. The base is an oblong, flat board. Across one end of its surface a strip of plate-glass is fixed, and near the other end a small piece of the same glass is fastened by means of a steel plate. The latter has a small hole in the centre, which is situated directly over the centre of the small glass. The specimen is mounted in the usual manner upon a block of wood, and is fixed upon the base of the apparatus, close up to the broad strip of glass, by means of two blocks of wood and a wedge. The board upon which these parts are fixed measures thirteen by sixteen inches.

The “T” piece consists of two bars, preferably of metal, but in this case made of wood, united at right angles. Through the three ends of this “T” piece three screws which have been filed to points at their ends are inserted, and project about three fourths of an inch from the surface of the “T”. Upon these three screw points the “T” rests. The distance between the screw points on the cross-bar of the “T” is six inches; the distance of the third screw from the line between the first two is twelve inches. This third screw, situated at the end of the long bar, is the micrometer screw; to its head is fastened a circular disk of wood, the circumference of which is divided into one hundred parts.

The knife-blade is fastened to the long bar on its under

surface, and at right angles to it, but parallel to the cross-bar, so that the edge of the knife is parallel to the line between the points of the screws of the cross-bar.

The point of the micrometer screw is inserted into the hole in the steel plate mentioned above and rests on the surface of the glass underneath. The two screw points of the cross-piece rest on the surface of the glass plate. The specimen is adjusted so as to lie directly in front of the knife. The "T" is now moved along the glass plate, revolving about the micrometer screw as an axis; the knife moves over the specimen and cuts a surface parallel to the plane of the glass, as is proven as follows:

During this motion, the edge of the knife is and remains parallel to the line between the points of the screws on the crosspiece, for its relation thereto is fixed in the construction of the instrument; and as these two screw points are and remain in the plane of the glass plate, the knife-edge must be and remain parallel to the glass plate. Furthermore, when the micrometer screw is fixed in relation to the "T", the edge of the knife must remain at a given distance from the plane passing through the three screw points, and as the surface upon which the micrometer screw point rests is in the plane of the glass plate, the plane of the screw points is identical with the plane of the glass; hence the knife-edge remains at a given and constant distance from the glass plate; and as it is and remains parallel thereto, it must describe a plane parallel to the plane of the glass. When the micrometer screw is rotated, so that the lower end of the "T" and with it the knife-edge approaches the plane of the glass, the parallelism of the edge to the line of the two upper screws is not altered; hence it is parallel to the plane of the glass in its new position. When the "T" is moved over the glass plate a second time, the same conditions hold good; hence the second plane is again parallel to the glass surface. Hence the section included between the two planes described must have parallel surfaces.

Although this original model is crudely constructed of

improper material, I have succeeded in cutting fairly good sections; of celloidin, 20 mm., and of paraffin imbedded specimens, 5 mm.

The advantage of this microtome over other forms is, that the principle is such that expert workmanship is not required; hence it can be produced at a much cheaper cost than other microtomes.

# THE PHYSIOLOGICAL DEDUCTIONS REGARDING THE USEFULNESS OF SO-CALLED ANIMAL EXTRACTS.

By H. A. HAUBOLD, M. D., of New York County.

*October 14, 1896.*

It is not my intention in the brief statements that follow herein to enter into a detailed discussion of the chemistry of the so-called animal extracts. Nor shall I enter into an analysis of the clinical observations already recorded regarding these substances. I intend merely to briefly summarise the deductions that have formulated themselves in my mind as to the possible influences these extracts can be capable of exercising when introduced into the body, and what rôle, if any, they play in the processes of metabolism.

A perusal of the history of the theory of the introduction of preparations of the organs of the lower animals into the human body as remedial agents develops the fact that this practice is as ancient as are a great number of supposedly "new things" in the science of medicine. And whilst here again I shall refrain from entering into detail, it is perhaps admissible to illustrate the antiquity of the practice by mentioning that, according to Pliny, "the Greeks and Romans ate the testicle of the donkey as a remedy for impotence."

The avenues of approach of the elements that are concerned in the regeneration and growth of the various parts, organs, and tissues of the body are the gastro-intestinal canal and the blood. A nutritive element, and, indeed, a so-called medicinal agent, must be in a certain condition or must have undergone certain definite changes before it can form a part of the general system. Animal extracts, classified from a physiological standpoint, belong to the organic, nitrogenised



constituents contained in organic matter. Upon their introduction into the digestive tract, they of necessity undergo the same changes in digestion as do the rest of their class, such as gluten, myosin, albumen, etc. It is difficult to conceive that a certain organ, as the brain, or spinal cord, or the testicles, will select from the mass of peptones, existing as they do in the blood in varying states from peptones to plasmin and searmin, any particular substance administered with the view of stimulating or regenerating any one of these organs specifically.

Whilst it is unquestionably true that medicinal agents by their mere presence in the blood produce certain effects, they are, nevertheless, not stored up in the body, but are eliminated by various channels at the expiration of variable periods of time. They may be, and no doubt are in some instances, concerned in influencing the processes of nutrition and waste, but they take no direct part in the maintenance of a physiological equilibrium.

This no doubt applies with equal force to the animal extracts. It is fair to assume that, if they perform any function whatever in the body, it is some such an one as indicated regarding other medicinal agents. Just why it is that a cell in a given organ can and does select from the plasma of the blood constituents that are as readily accessible to all the other organs and tissues of the body, and manufacture therefrom its peculiar secretion, it is impossible to say. And whilst there is no doubt that this cell individuality is modified by certain influences, either physiologically or as in disease, it is not easy to see what modification can be produced as the result of the administration of animal extracts. These agents must of necessity exist in the blood as a part of the general nutritive elements always contained therein and that are derived from ordinary articles of diet.

Regarding the nucleins, proto-nucleins, or nucleo-albuminoids, as they are called, extended observations have recently been made by chemists and physiologists. Nuclein, it is held, consists of some form of proteid combined with a

nucleic acid. Nucleic acid exists in animal cells and is readily isolated from nuclear material by certain chemical means. When nucleic acid is brought into contact with albuminoids in an acid solution, a precipitate is thrown down that has the general characteristics of nucleins. Still it must be borne in mind that, although nucleic acid is found to exist in all nucleins, the proportion it bears to the combined proteid, and more important still, the method of combination, must of necessity determine the individuality of the nuclein contained in the cells of a given tissue or organ. It is this peculiar cell individuality that constitutes its so-called life and enables the different organs to manufacture their characteristic secretion from the material furnished by the plasma of the blood,—as an instance, the pancreas, which creates its pancreatic juice with its ferments. Of course this applies equally to all the organs that are concerned in the production of elements necessary to life.

Nucleins must of necessity undergo the same changes in digestion as do their class in another form. They are proteids and albuminoids, converted into peptones taken up by the blood from the organic, nitrogenised constituents of the plasma, and are converted into the various constituents of organs and their secretions. The only difference between them and those organic, nitrogenised constituents contained in ordinary articles of diet is the form in which they are introduced into the system, the latter usually being combined with the carbohydrates, hydrocarbons, and the inorganic bodies.

Of course when nucleins are administered hypodermically, they do not undergo any digestive changes. It is claimed that when introduced into the blood in this manner they produce leucocytosis; but what bearing this proposition has upon the assimilation of nutritive substances is not clear. It is not improbable that this leucocytosis is really an effort on the part of the blood to rid itself of a foreign substance, the tissues not being in a condition to make use of the material thus suddenly entering. That an increase in the num-

ber of leucocytes does take place upon the introduction of certain substances into the blood is illustrated in cases of diphtheria, the leucocytosis being greater in proportion to the virulence of the disease or the number of bacteria present.

It would seem fair to deduce from the foregoing propositions that animal extracts, including the nucleins and proto-nucleins, do not furnish the blood with elements from which tissues are more readily built up than obtains from the proteids contained in ordinary articles of diet. If these agents stimulate metabolism by their simple presence, it is still necessary that the nutritive material, to take the place of what is consumed, be present in the blood, and that the tissues be in a condition to make use of them.

Animal extracts of themselves can hardly furnish the tissues with material for their regeneration beyond the ordinary proportions of weights and measures, if indeed they are made use of at all. They certainly are not deposited in the tissues and then take root and grow unless the material for their growth was obtained through the usual avenues taken by nutritive substances, *i. e.*, the digestive tract and the blood.

The deductions I offer here are the result of an analysis from a physiological standpoint only and are submitted to you with the request that they be unreservedly criticised. I have endeavoured to make them as concise as possible and devoid of uncertainty or qualifications. Many of the animal extracts are now on the market, and the experience the medical profession has had with them must be sufficiently matured regarding their usefulness to make a discussion of them instructive.

## ONE POINT IN THE TREATMENT OF ENDO-METRITIS.

By WILLIAM H. ROBB, M. D., of Montgomery County.

*October 14, 1896.*

During the last ten years much has been said and written on the subject of endometritis. Its various causes have been carefully and thoroughly studied. Its clinical history has been fully noted. Its pathology has been considered by some of our ablest and most competent students. Its treatment has been modified and improved by different physicians and surgeons. The subject has been discussed at public meeting and in private essay. In fact, so much has appeared on the subject of late that little is left for any one to consider. I have concluded, therefore, to ask your attention for one moment to the consideration of "One Point in the Treatment of Endometritis." I shall not detain you with a list of the several causes that induce or complicate the disease. Neither will I rehearse its manifold symptoms, excepting as I may be obliged to refer to some of them in the course of my remarks on its treatment. It is well, I think, to review briefly the anatomy and physiology of an organ before we consider the diseases that affect that organ. This is doubly true and important for us to consider before we discuss such treatment as is likely to restore that organ to its healthy condition.

The uterus is a hollow, muscular organ situated in the pelvic cavity, and located between the rectum and urinary bladder. In shape it is much like a flattened pear. It is three inches in length and one inch in thickness. In multipara it is a little larger. It is described as being composed of fundus, body, and cervix. In structure it is composed of



a serous or peritoneal covering, of a middle, muscular wall, and of a mucous lining. In health the fundus looks upward and forward, the cervix downward and backward. The axis of the womb corresponds with that of the inlet of the pelvis. The fundus rests on a line with the brim of the pelvis. The uterus is thus supported in the median line and held in position by the broad, round, and sacral ligaments together with the vagina and connective tissue between it and the rectum behind and the urinary bladder in front. In this position it is freely movable, and is raised and lowered in response to the action of the diaphragm. Its walls are thick and its cavity small. The part within the cavity is triangular in shape, and the body is so flattened from before backwards that the anterior and posterior walls touch each other. The base of the triangle is above, and on either side leads into the Fallopian tube. Below, the cavity terminates at the internal orifice, and through this opens into the cavity of the neck. At this point of junction the cavity is somewhat contracted and is often smaller than at the external os, and is circular in form. In the cervix the cavity is tubular, slightly flattened before and behind, and is a little dilated in the middle. The mucous membrane of the body of the uterus is soft and smooth, excepting during the menstrual period, and devoid of any roughness or ridges in the unimpregnated condition. In colour it is dull red. It is lined by columnar-ciliated epithelium, and when examined under a lens presents the orifices of numerous tubular follicles. The membrane lining the cavity of the body differs greatly from that lining the neck. That lining the neck is rough and firm. On the anterior and posterior walls of the cervix are two longitudinal ridges, from either side of which rugae radiate obliquely upwards like the branches of a tree, so as to present an appearance that has been called *arbor vitae uterinus*. Between the rugae of the arbor vitae are many saccular and tubular glands. Naboth described a condition of the glands that prevails when from any cause their orifice is closed and they become distended by their own normal secretion. They

are easily detected, either by touch or sight. Under the finger, they appear to resemble small shot. By sight, they appear as transparent vesicles.

The glandular structure of the uterine mucous membrane is most abundant in the cervix; it is less abundant as we ascend the neck, and least abundant in the cavity of the body. Vascular papillae are sometimes found in the lower part of the cervix. As menstruation approaches, the whole uterus becomes congested and enlarged; the mucous membrane, and particularly its glandular structure, becomes distinctly hypertrophied. The cavity is almost obliterated by the swollen membrane, which becomes detached from the deeper structure. According to Foster, we are taught to believe that "the swollen and hypertrophied mucous membrane then undergoes a rapid degeneration, and is shed, passing away sometimes in distinct masses, forming the latter part of the menstrual flow. The loss of the mucous membrane is so complete that the base only of the uterine glands is left, and from the lining epithelial cells the regeneration of the new membrane is said to take place." Quain tells us that "this muscular disintegration commences along with the menstrual discharge close to the cervix, or at the os internum, and advances progressively towards the fundus during the remaining days of the flow of blood. The haemorrhage is the direct result of the destruction and open condition of the small vessels. The restoration of the mucous membrane, beginning even before the cessation of the menstrual flow, proceeds in the same order from the lower end upward to the fundus. The lining membrane of the cervix does not participate in these changes."

Men differ in their opinions on the same subject. It appears differently to different observers. We find in regard to the subject of endometritis, that some have doubted and others have denied that it ever occurs. From the functional activity and periodical changes that the uterine mucous membrane is constantly undergoing from the time of puberty until that of the menopause, one might expect that it would

be the seat of disease. That it is frequently the seat of inflammatory disturbances that are acute, catarrhal, and specific as well as chronic in their nature, is now generally admitted. Not only the frequency, but the chronicity in many cases, makes the disease one of the most important that comes under our observation. While in itself it is not often dangerous to life, still every one knows the condition of severe invalidism that it is likely to produce. In addition to this disability and injury, we have been taught, not alone by observations made at the bedside of the patient, but by the conditions found on the operating-table of the surgeon as well as by those found in the dead-house, that endometritis is often complicated by conditions that are among the most serious and dangerous with which the surgeon has to contend. We find in the history of many women who suffer from serious pelvic and abdominal trouble, that they had previously suffered from endometrial inflammation. This has been observed frequently, and by different observers, so that we have now come to the conclusion that these more dangerous conditions are complications of, and in some way caused by, the original disease of the womb. Whether these complications are due to the extension of the inflammatory process to and through the Fallopian tube to the internal cavities by continuity of surface, or whether they depend on the transmission of specific germs through the same channel, is still in doubt. The majority of observers, I believe, favour the latter theory. If in the medical profession a difference of opinion exists as to the existence and nature of endometritis, I must say that I believe a greater difference of opinion exists as to its treatment. In regard to the general or constitutional treatment all will agree. There is little agreement as to its local and internal management. One would have nothing applied to the inside of the womb; another would have the whole mucous membrane removed, either by caustics or mechanical measures; and a third would have the entire uterus, with the appendages, removed. Cases are found that would justify each course. One recovers without any

treatment, while another progresses from bad to worse until the complications arising demand the removal of all the parts named. Each case must be treated on its own merits. The same case will require a change of treatment as it progresses from one stage to another. The simple enumeration of the different agents found recommended in the various text-books on diseases of women would fill pages, and their mode of application would fill a small-sized volume.

Since I began practice thirty years ago, I have always kept one cardinal point in view in regard to the treatment of individual diseases; that point has been to hold fast to that which has been found good and useful. In other words, when you find a good thing, stick to it. This I have done in the treatment of such cases of endometritis as have fallen into my hands. I have found one agent more generally useful than any other. That single chemical is nitrate of silver. The application of this agent constitutes the one point in the treatment of endometritis to which the title of my paper alludes. I know some have been prejudiced against its use by the haphazard condemnation that has been hurled at it by those high in our profession. That it has not always been used with what seems to be wisdom and prudence, I am ready to admit. That it ever does harm in the hands of careful men, I believe is doubtful. It may be used in varying strengths, from a solution of five grains to the ounce up to one of saturation. The use of the solid caustic is often followed by the best results. For the success of this agent I have noted a few cardinal principles, the close observance of which I believe goes a great way in securing the direct results. I am frank in saying that in these there is nothing new. I will enumerate them in the order of their importance.

1. Precede the use of intra-uterine application by the observance of the most rigid antiseptic precautions.

2. If not found, secure perfect drainage.

3. Repair injuries, reduce displacements and deformity and remove, as far as possible, complications.



4. Remove all unhealthy secretions, leaving the interior of the organ clean and dry.

5. Make the application thoroughly and carefully.

6. Use weak solutions in the early stages and in mild cases.

7. Reserve the use of the solid caustic for the chronic, granular, and degenerative stages.

In conclusion I wish to say, that with a conscientious desire to benefit my patients as much and as quickly as possible, my confidence in the use of this remedy has steadily grown. By its judicious use much time will be gained, much suffering averted, many dangerous operations avoided. My object in writing this paper has been solely to remind you of the use of one agent, one point in the treatment of endometritis.

#### DISCUSSION.

Dr. L. J. BROOKS, of Chenango county, said that to his mind there was no greater fallacy than the supposed cure of endometritis by nitrate of silver applications, particularly the strong ones. His earlier studies in medicine had been pursued under a most excellent observer, and a gynaecologist. He had, therefore, had an opportunity of watching the immediate beneficial effect and apparent cure from the use of these applications, but he had frequently found that they left an atrophic, non-secreting, and irritable lining membrane. These cases would return again and again with a contracted cervix and an irritable mucous lining. Like other local astringents, the weak nitrate of silver solution might have a beneficial effect, but he felt sure that the stronger ones should be most carefully avoided. The treatment was similar to that pursued in nasal affections. For instance, a nasal catarrh could be temporarily benefited apparently by caustic applications, but the after-effect—the dry, atrophic mucous membrane—was a most uncomfortable condition. For these reasons, those engaged in the treatment of nasal affections had for the most part abandoned such applications. The use of the curette allowed of the regeneration of the mucous membrane of the uterus, and thus allowed of the formation of a normally secreting mucous membrane.

Dr. J. FRANCIS CALEF, of Middletown, Conn., said that he had taken considerable interest in this paper, as he had been investi-

gating the contents of the uterus and of the bladder. He had been making bacteriological examinations for the last two or three years in these cases, and had come to the conclusion that a great many attacks of metritis start originally as bacterial diseases; that the congestion and thickening and secretion of serous matter supplied a good nidus for the development of bacteria. These bacteria, in turn, became another source of irritation. He had also found that very weak solutions of nitrate of silver would kill at once many of these forms of bacteria. Very weak solutions of nitrate of silver (1 to 3,000) had been found very decidedly soothing in conditions of inflammation and congestion of the mucous membrane. After such applications it would be found that the colour of the mucous membrane would be more nearly normal than before. In the use of these weak solutions, it should be remembered that very much less of the chloride was needed to neutralise the nitrate of silver solution. For this reason, he had always taken the precaution to give a thorough lavage of the surface with sterile water *free from chlorides*. A very small quantity of chloride would in itself be sufficient to neutralise the action of the nitrate of silver. He thought that any one who had carefully applied nitrate of silver to the endometrium, and had taken the precaution to have the surface to be treated thoroughly cleansed in the first place, and the action of this remedy limited, could hardly fail to believe that such applications were useful. As was well known, we had in chlorine a means of effectually limiting the action of silver solution.

Dr. W. M. BEMUS, of Chautauqua county, said that in the treatment of endometritis he had sometimes found it difficult to gain access to the mucous membrane on account of the large amount of catarrhal exudation. He knew of only one agent which would dissolve this exudation and that was peroxide of hydrogen, although it did not act as thoroughly as might be desired. Lately he had resorted to galvanism within the uterus. This caused a disintegration of the mucous membrane, and an application to this membrane of salol seemed to prepare the surface well for the applications of silver or of chloride of zinc.

Dr. CRONYN, of Erie county, said that he had not understood the reader of the paper to say that these applications should be made to all cases of endometritis. Personally, he had seen many instances in which the os and the lower portion of the cervix were beneficially treated by even the solid stick of nitrate of silver.

He was not prepared, however, to insert the solid stick of silver within the uterus, because there were other and better agents. The catarrhal discharge he did not always look upon as a disease of the cervix or endometrium. He frequently used a mixture of carbolic acid, tincture of belladonna, and tincture of iodine, applied to the endometrium, instead of curetting. Curetting he considered a fearfully abused operation.

Dr. ROBB, in closing the discussion, said that he had not gone at all into the details of the treatment. Regarding the remarks of the first speaker, he said that he thought what this gentleman considered to be the results of the applications of the nitrate of silver were in reality a part of the disease, for they were found in cases in which no applications of any kind had been made to the endometrium. One of the principles laid down in his paper was to secure perfect drainage. In many instances it was not necessary to dilate the cervix, as this had been done by Nature for us. The secretions could be removed by the syringe, cotton, or dull curette, and then with a little mop of cotton the cervix is carefully wiped off. A mop of cotton could then be dipped into sterile water and used to wash out the cavity of the uterus. In the same way, the surface should be thoroughly dried before an application is made. In long-standing cases, the disease is not confined to either the body or the neck, and hence our object should be to make an application to the whole interior of the uterus. In mild cases, weak solutions would be found sufficient. In chronic cases, where there are small fungous growths, the curette could often be avoided and the solid stick of nitrate of silver used to great advantage instead. He did not wish to be understood as advocating the introduction of a stick of nitrate of silver and allowing it to dissolve there; such practice, in his opinion, was abominable. He did not believe that any cicatricial tissue would form by a slight touch with nitrate of silver. He had seen granular lids and inflammations of other mucous membranes treated to advantage with nitrate of silver, and in the particular class of cases treated of in his paper he had never found anything so useful, as a general application, as nitrate of silver.

## A CLASS OF FATAL CASES PRESUMABLY DUE TO INTESTINAL PTOMAINS.

By E. D. FERGUSON, M. D., of Rensselaer County.

*October 14, 1896.*

Something over twenty years ago a case occurred under my observation that created in me a profound interest and became the subject of considerable thought and reading. The patient, a man about forty years of age, had the appearance and history of robust health. I had known him for several years, and his sturdy figure had impressed me with a favourable view as to his ability to resist disease and his chance for many years of life. He was taken quite suddenly with abdominal pain and became rapidly very ill, so that on the second day I saw him in consultation. From the condition and clinical history, we could fairly exclude intestinal obstruction and peritonitis, but vomiting, which had begun early in the trouble, had continued, and instead of becoming offensive in odour, as would have been expected in obstruction, was of a watery material which later showed small, brownish flakes which gradually grew darker. The vomiting was frequent, but not violent, and at times was rather a regurgitation than a vomiting. His pulse was rapid, the countenance anxious, the complexion somewhat "muddy," although he had naturally a dark skin, and the sclerotic lost its pearly clearness, although not to a degree to lead me to pronounce it coloured with bile. The movements of the bowels did not throw much light upon the case, but the colour, though dark, was not a healthy brown, neither was it a green nor a black. There was quite a degree of tympanites, but no notable tenderness.

The man was evidently "sick unto death," though he



retained his mental faculties in a fair state during the greater part of his illness. The vomited material grew darker, finally almost a "black vomit;" his pulse became very rapid, and just before death the temperature rose to a very high point—over 105° F. No post-mortem examination was made, nor do I now think that any positive result could have been obtained from one, in view of the limited knowledge of pathology then in our possession.

Here was a case that I was unable to classify. That it was not a common disease was evident; nor could I assign it to any of the recognised forms of fever or local inflammations. That it was toxic in its origin seemed the only rational explanation; but none of the mineral or alkaloidal poisons would furnish a similar clinical history. The animal poisons seemed the more probable basis of explanation, and I recall my disappointment when, some few years thereafter, I read Boehm's article on sausage, fish, and cheese poisoning, in Ziemsen's "Cyclopedia," without securing definite aid in unraveling the tangle. I had awaited the appearance of that volume with this case in mind, and, though disappointed in the hope of definite aid, my opinion that I had seen the work of some animal poison was strengthened in a general way.

However, I had been unable to secure evidence that the patient had taken any food likely to cause the trouble, or different from that taken by other members of the family. Hence I finally evolved the idea that his was a case of auto-infection, though the conclusion was based upon a process of exclusion rather than any reliable evidence from pathological investigations.

About ten years thereafter, I witnessed a similar course of events in a girl about ten or twelve years of age. The onset was sudden, there being considerable abdominal pain, fever, and vomiting, with rapid failure in the vital forces. The vomiting was possibly more regurgitative in character than that of the first case, but the coloured and finally "coffee-ground" appearance of the material from the stomach recalled the former case and led me to anticipate the fatal issue,

which occurred in slightly less than three days from the time of onset. By this time, some progress had been made in the chemistry of decomposition. Alkaloids had been secured from animal tissues, and a presumption was beginning to take reasonable grounds in favour of the intervention of bacteria in the process. The work of Selmi of Bologna, Gautier of Paris, and Brieger of Berlin had begun to throw a degree of valuable light upon this somewhat obscure field, so that rather definite notions were possible; and I began to speculate somewhat on the various links in the chain represented by my two cases. The dark or "coffee-ground" vomit had impressed me as an important element in the evidence, for I felt that I could exclude upon reasonably good grounds the presence of gastric ulcer in any of its forms as the source of the haematemesis. In piecing together the more prominent signs and symptoms as I have related them, I came to the conclusion that the first step was due to the presence and functional activity of some micro-organism in the intestinal canal; that thence resulted some ptomain or toxin, which was absorbed into the intestinal veins and reached the liver, where it induced a rapidly progressive and diffuse parenchymatous hepatitis with its attendant systemic and local phenomena, among which was the haematemesis. To a certain extent, the process seemed analogous to acute yellow atrophy of the liver, or even yellow fever, though the cases did not show notable icterus. The analogy was sufficient, however, to induce the opinion that when another case occurred an autopsy would show profound hepatic changes.

Not very long after the second case, I was requested to see a child about four years of age, which was thought to be suffering from peritonitis, with a view to opening the abdomen in the hope of finding the cause and removing the same. Though the child's abdomen was somewhat tympanitic, the evidence of peritonitis did not seem clear enough to warrant a surgical procedure, and the fact that regurgitation of a watery mucus with small, brownish flakes had recently occurred, together with the rapid development of the symp-

toms, led me to conclude that the case was similar to those just related, and that "black vomit" would occur and death follow. Such proved to be the case, the patient perishing after about three days of illness. The autopsy showed no peritonitis. The bowels were distended with gas, were quite hyperaemic, and contained a rather dark and somewhat grumous material. The liver had undergone notable changes, a portion being somewhat swollen, rather nutmeg-like, with brown and yellow mottling on section and softened in consistence, while the remainder was shrunken, the capsule was wrinkled, rather yellow in colour, and was flexible, with a rather leathery feel while handling without breaking the capsule.

A year or so after this case, I saw a man about forty-five years of age, who was also supposed to be suffering from peritonitis. The history showed abdominal pain, not localised, though apparently intestinal; very moderate distention with gas; rapid development of symptoms of exhaustion; rising fever; vomiting of a glairy, rather watery fluid; and slight icteroid tinge of the sclera. I ventured the opinion that the patient would have "black vomit" and would perish within a short time, which proved to be the case, for he died on the following day. A post-mortem examination showed the same condition of the abdominal organs that was found in the case of the child, the remaining organs of the body showing no evidence of disease.

So far, I had encountered only cases of spontaneous origin; though they were not the only ones I had seen in which I had believed the same or a similar morbid process existed, yet they presented a more pronounced and typical course.

I now turn to a series of cases having a relationship that rendered them of even greater importance, for from them it seems reasonable that some practical conclusions may be deduced.

One evening three or four years ago, I was requested to see a young man who had just been shot in the abdomen. The bullet was believed to have penetrated the abdominal

cavity. There was sufficient shock to justify a presumption that visceral injury had occurred. The usual preparations were made, and as early in the following day as the light would allow the abdomen was opened, and a wound of the intestinal canal was found and closed. The patient progressed without serious symptoms for about two days, when he began to have abdominal pain and regurgitation of a watery material, which finally began to show brown specks, but was not offensive. I felt that we were dealing with another case of poisoning by intestinal ptomains, and that a fatal issue would soon supervene. This proved to be the case, and the autopsy showed an absence of peritonitis aside from the adhesive peritonitis that was connected with the Lembert stitches, and which had progressed only to the conservative degree that had resulted in the efficient closure of the wound in the bowel. The liver had undergone changes similar to those described in the foregoing cases, and there was no obstruction of the bowels.

In the spring of 1895, I operated for the purpose of suspending a retroverted and retroflexed uterus in a patient about thirty years of age. She had been under my care for about ten years, and persistent efforts by the use of pessaries had failed to restore and support the womb. She was in perfect physical health, and, measured by our present views of abdominal surgery, the risk was as near to zero as could be expected. The operation was simple and brief—a short incision gave ready access to the parts, and the uterus was brought into a forward position and fastened there. No severe shock was manifest, and the patient for twelve hours gave no evidence of any trouble. On the morning following the operation, she was comfortable, but had regurgitated a small amount of watery material. This fact made me anxious, particularly as she showed some fever not accounted for by evidence of trouble in the operative field. On seeing her again in the evening, the regurgitation had increased and, though no brown colour was yet present in the vomited material, her evident tendency, as shown by quickened pulse,



rising temperature, and muddy complexion, was to enter upon the course of the other cases I have related. On the following day, the vomit became dark, nearly black, and she died a little over fifty hours after the operation.

Not long after this case, I operated for the removal of a large uterine myoma in a woman about fifty years of age. The patient was in fair general health, probably better than the majority of such patients, and the removal of the uterus was unattended by unusual difficulties or any accident. The magnitude of the operation, however, resulted in considerable shock, but the reaction was satisfactory. For the first eighteen hours all went well, when regurgitation began, and the now somewhat familiar picture was reproduced, she dying about forty-six hours after the operation.

Again, in February of this year, I operated on a woman about thirty-five years of age and in good physical condition, removing both ovaries, which were cystic and presented papillomatous growths. The cysts were each about the size of my two fists, and were firmly bound in the pelvis. The operation was difficult, but no accident occurred, and the shock, which was moderate, soon passed off. For the first twenty-four hours, all went as satisfactorily as could be wished. She was comfortable and cheerful, and the bowels responded satisfactorily and thoroughly to the saline cathartic given on the morning following the operation. During that afternoon, however, the regurgitation began, but without notable abdominal pain and no distention. The bowels continued to move until death, the discharge becoming dark coloured toward the end. The vomit finally became black, and she died about sixty hours after the operation.

Here are eight cases, presenting a sufficient number of signs and symptoms in common to indicate a similar origin, and to justify placing them in a class by themselves. The conditions common to all the cases were: A sudden onset and rapid course of the trouble; the reference of subjective symptoms to the abdomen, such as pain and nausea; the presence of fever in each instance, the fever usually becoming very

high just before death; the occurrence of "coffee-ground," or black, vomit as the cases progressed; the absence of the usual signs of peritonitis; the absence of evidence of intestinal obstruction; the dusky or muddy hue of the countenance some hours before death, with possibly moderate yellowness of the sclerotic; and finally, the evidence furnished by the three autopsies made in the series of eight cases, as related. Only one explanation has seemed to me tenable, and that was the presence and activity in the intestinal canal of some organism capable of producing a toxin which could not only give rise to pain in the bowels, but was capable of profoundly disturbing the function of the liver so as to induce a parenchymatous hepatitis with rapid softening and absorption, resulting in an acute atrophy. Of course this process may have been located in the liver more particularly than in the bowels, but that point did not allow of determination by any means at my hands.

There were four medical and four surgical cases in the series, and the clinical history removed them from the category of any ordinary infective process. Neither could we invoke the idea of some special micro-organism of a contagious nature, for the cases were isolated and not associated with similar cases either by time or locality, nor were they subject to unusual conditions or causes of disease, either in food, domicile, or other element of environment. The fact now recognised, that the products of bacterial life are varied by certain conditions, in some instances a pathological micro-organism failing to give virulent products, while a change of conditions will result in a full establishment of its malign properties, seems to me pregnant with significance in many ways. It must be accepted that bacteria exist in the intestinal canal in all persons, and under certain yet unknown conditions some of them may become capable of inducing disease, though usually the tenancy is harmless. The *bacillus coli communis* is a familiar example. The only logical explanation of this fact lies in the assumption that usually the functions are so discharged that the enemy is either

inhibited from pernicious activity, or the special material upon which it depends for action is not at hand. In a general way, this may be represented by the terms immunity, resistance to disease, and the like; nor are these idle terms. They represent ideas that should command our attention with a view to practical deductions. It is not probable in the light of our present knowledge of pathology that these eight patients at remote intervals and places received into their bodies any micro-organism or toxin from which all other persons in the vicinity were exempt. It is more logical to suppose that they had become specially susceptible to the influence or activity of something present in the persons of others as well as of themselves, where, however, it either was not functionally active, or its products were neutralised. In the surgical cases, it requires but little strain on the medical imagination to conceive that the shock attendant on opening the abdomen could have a notable influence on the chemistry of the intestinal canal. The subject has lately received considerable attention from other standpoints, and we are quite familiar with such terms as "stercoral empoisonment," "intestinal ptomains," etc. We can conceive of no other explanation, particularly of the fever, for all now accept that fever is usually the result of the presence of some toxin, whether the toxin that results from the bacillus of diphtheria or typhoid fever on the one hand, or from the staphylococcus present in a furuncle. Just what constitutes the essential condition of vulnerability and reaction in each case, why some are made ill and others escape, is the problem that offers itself. Myriads of typhoid bacilli are swallowed without pathological results. Most of us have received the diphtheria germs in our bodies. Staphylococci are constantly gaining access to the crypts of the skin in each one of us without producing suppuration.

In many instances we can gather a clue to some of the conditions favouring infection. No extraordinary care is required to prevent local infection at pressure points in patients confined to bed with a fever, but when paraplegia

exists all our best directed efforts will probably fail to prevent a bed-sore. In this instance, a profound interference with innervation has evidently contributed to the creation of a local susceptibility to certain pathogenic germs. A review of the question of immunity has impressed me with the varied conditions under which it may exist, and the important fact that it may be lost.

In our surgical experience it is notorious that whatever diminishes the condition known as vital force—a term we can hardly dispense with as yet—increases the susceptibility to pathogenic organisms. Diabetics, drunkards, in fact all those who are below par by their own fault, or through diseases, do not present the same chance for successful surgical work as do those in good condition. A few pus-producing germs will usually fail to incite suppuration if in contact with healthy tissue, but even if in a healthy person they be present on or in tissue locally disturbed, as in tissue tightly ligatured, we can safely count on infection. We know, too, that a contagious disease will fail to infect some members of a family while others are attacked, and yet those who escape may contract the disease at a later exposure, and this without any physical change or deterioration in general health that we can note. The immunity of the negro to yellow fever is a fact for which we have no adequate explanation, any more than for our inability to engraft syphilis on the lower animals; but all these facts have a lesson which we should note and utilise so far as we can. In interpreting the phenomena connected with the cases I have related, it seemed fair to conclude that the result in the surgical cases was not due to the introduction of infection at the time of operation. This conclusion was justified by the absence of pathological changes in the operative field, together with the fact that the clinical history corresponded with those cases in which no operation was performed. If this conclusion is justifiable, it adds another reason to show us that at present, much as has been done to diminish the hazard of severe surgical procedures, there remain some



conditions involving risk to life which are as yet beyond our control, and which should prevent us from assuming that even an exploratory opening of the abdomen is free from risk. Previous to the case of suspension of the uterus, I had surgically entered the abdomen in a series of over twenty-five successive instances without a fatal result, and this simpler and apparently safer case than any in that list succumbed.

In explanation of the process, as before indicated, it seems reasonable to me to invoke the aid of shock under the influence of which germs within the intestinal canal were able to produce toxins, which under ordinary conditions would not have been the case. So far as the preparation of the patients was concerned by examination in reference to the bodily functions, including the kidneys, etc., by the use of salines to "clean" the intestines, and by a proper diet in each instance, all that reasonable requirements could demand was done. It is not to be forgotten also that the usual history in these cases was previous good health, in some instances specially so. The speediness with which the condition developed and progressed to a fatal issue is also one of the important facts.

In discussing these cases with some of my medical friends, I find that similar cases have occurred under their observation, but, while I find that most surgeons are inclined to credit them to acute "stercoral poisoning," they usually have ascribed the origin of the trouble to obstruction of the bowels, either by adhesions, or the paralysis connected with peritonitis. In my cases, the evidence so far as it is available is opposed to such a conclusion; nor does the clinical history correspond with that of intestinal obstruction. In some of my cases the bowels were moved, and, in the last one, the passages continued free to the end. That there should be a paretic condition of the bowels in a portion of the cases is not remarkable.

In a series of cases presented by Dr. H. O. Marcy at the recent meeting of the American Medical Association, and

printed in the *Journal of the American Medical Association* for August 8, 1896, I find that he has assigned intestinal obstruction as the cause of the trouble in all his cases. In some of them it is clear that such was the explanation, but in others it is not so clear. The following is one of the cases:

"Mrs. D—, aged forty-two years. Very nervous organisation, but in fair general vigour, although for some years a sufferer from a retroverted, adherent, enlarged uterus, cystic ovaries, and diseased tubes. The bowel had been freely evacuated; only fluid food in small quantities, often repeated, given for some days before the operation, with as large quantities of water as could be easily taken. Operation, March 18, 1896. It was difficult, owing to the embedding of the diseased adnexa in the pelvic cavity. After the removal of the diseased structures, the enlarged retroverted uterus was brought forward and sutured upon each side to the abdominal wall. The pelvic peritoneum was reformed by lines of buried tendon sutures, leaving only a small portion of the fundus of the uterus uncovered, which was partially denuded of its peritonaeum, owing to old adhesions. The small intestines were covered by the omentum with great care, the fundus of the uterus dusted with sterilised aristol, and a vaginal drain of iodoform gauze carried through the posterior cul-de-sac into the vagina. Patient rallied well from the ether. The night following the operation was comfortable. Nausea and vomiting ensued on the morning of the 19th, with a singular weakening of the heart's action, followed by a rapid elevation of temperature, reaching before death 107° F. The skin was mottled with dusky patches some hours prior to death. These conditions were believed to be due to intestinal obstruction. The gauze drain was withdrawn and an effort made to examine the pelvis through the opening, but without avail. Regardless of every effort, the patient died about forty hours after the operation. The autopsy showed a loop of the lower part of the small intestine attached to the fundus of the uterus, which was separated with the greatest ease. The intestine above was filled with several pints of a very fetid, dark-coloured fluid, believed to have undergone decomposition prior to death.

It is manifest that this case does not correspond to the usual history of intestinal obstruction nor does the recent adhesion "which was separated with the greatest ease"

amount to an obstruction, for it is certainly common to have temporary adhesion of the bowels after abdominal section and in cases of peritonitis, without serious trouble. The course and termination of the case, and the presence in the bowel of "several pints of a very fetid dark-coloured fluid," speak strongly for the existence of some condition which was more important than even the possible obstruction, which we may probably assume was not occlusion. In our classification of cases, it is important to seize upon some essential element for the assistance to be derived therefrom in our consideration of the clinical histories, and this is accomplished in placing to the front the idea of intestinal ptomains. I do not deny that intestinal obstruction may be present in addition. What I do wish to call attention to is, that obstruction of the bowels without concomitant changes in the intestinal contents is usually a quite chronic condition, a fatal issue occurring at times only after many weeks. No doubt the obstruction is occasionally so prominent and important a factor as properly to entitle it to become the designating feature; but in many of the cases it is a minor element, and in still others does not exist.

It would give me pleasure to present a full *exposé* of the life-history of the micro-organism to which the process is due, but no light has been thrown on that part of our subject.

In conclusion, I must place my title in error by relating a case that recovered, and I do so with some hesitation, for the account is so remarkable that it still seems to me like a "traveler's tale." Nearly two years ago, I was requested by telephone to go to a neighbouring town, prepared to operate for obstruction of the bowels. I learned over the telephone that the patient had given birth to a child about two days before; that she had failed to have movements of the bowels, was somewhat tympanitic, was vomiting a dark fluid, had fever and abdominal pain, and was very much prostrated.

As it would be some time before I could reach the place, and as cathartics had been tried in vain, it was agreed that, awaiting my arrival, copious enemas of water should be given.

The treatment was diligently pursued. A large bag of water was emptied into the colon, and as it did not return, was followed by another—in fact, by several others. In the mean time, the vomiting had increased in quantity and in frequency, and finally became faecal in odour, which was at first regarded as confirmatory of the diagnosis of obstruction.

On my arrival, I found faeces in fairly good-sized pieces in the recently vomited material, while some of that vomited at an earlier date was odourless, but contained sediment nearly as dark as charcoal dust. The patient was in a very weak condition, but she had begun to perspire moderately, and her pulse was slightly less frequent, and the fever had fallen. Though I believed she would die, the idea occurred that possibly the poison could be removed in this unusual manner, and the washing was continued until the vomited material was quite clear. In order to maintain the action of the heart, strychnine was given hypodermatically in heroic doses, being guided by the pulse. She hovered between life and death for several days, then rallied somewhat, but developed a broncho-pneumonia and its attendant pleuritis, which placed her in great peril again. She finally recovered, and I believe has remained well. It is manifest that this treatment cannot be applied as a rule, but the lesson it carries is patent.

The arguments that have been made to explain the condition by the presence of a special microbe seem to me to lack sufficient fulness to entitle them to stand as final. Various organisms have been found in the intestinal canal—in cases of “stercoral empoisonment,” even the pus-producing staphylococci—particularly in puerperal cases in which the pelvic organs were free from pathological changes. The problems are too recent and too complex to allow of definite conclusions on that phase of the question. In view of what is known of the behaviour of micro-organism under varying conditions, it is not improbable that we may finally arrive at two conclusions: First, the condition may be due to a special ferment, either a bacterium or an enzyme, and this may be



present in the body without pernicious influence until a favourable combination of circumstances arises. This is favoured by what is known of such organisms as the bacillus tuberculosis, the pneumococcus, etc. Second, it seems quite probable that the process may not depend upon one special organism, but circumstances may render one of several the offending agent.

This last supposition would involve the idea that the trouble is not dependent upon a constant cause; and as a corollary, it would follow that the intermediate steps may not be the same, or in other words, that we now class together several distinct processes on account of certain striking features in common. Such a conclusion seems to me probable, for the variation in the signs and symptoms of the cases noted, as well as in others I have not reported, seems to me to justify the assumption that similar, but not identical, processes were to be expected in the final explanation. However, the personal element of the equation may prove more important than is suspected.

There is still another hypothesis that is not entirely untenable. It is manifest that the chemistry of the digestive process is to a positive degree under the influence of the nervous apparatus, not only as to the rate of the process, but quite probably as to various details of it. Hence it is entirely possible that, given the usual elements of material and mechanism, if the nervous influence is sufficiently disturbed, products may result that could prove highly deleterious. The disturbance in digestion that occasionally comes to most people when under depressing emotions is a matter of common observation, and the limit of that disturbance has not been defined.

Concerning the measures which we may rationally take to protect our surgical cases from this danger, it is manifest that whatever will place the intestinal canal in a state of relative freedom from vitiated food products and micro-organisms would be reasonable measures to adopt. This can probably be best accomplished by a diet of plain articles of

food, as milk, fish, etc., for three or four days before the operation, with the use of one or more doses of calomel, to be followed by Epsom salts on the day before the operation. It is quite possible that calomel has a special usefulness for this purpose. The free use of water also, to aid in the elimination, particularly through the kidneys, is important.

Still, do what we may, it is to be feared that for some time to come we shall occasionally encounter one of these sad cases, and, as we advance in a series of successful operations, we should not flatter ourselves that we have mastered all the perils attendant upon surgery, or that the day of "capital operations" has passed.

#### DISCUSSION.

DR. MARCY, of Boston, said that the profession was deeply indebted to the author for opening up this new line of investigation and thought. He had had several conversations with the reader of the paper, and he entirely accepted the statement that in his own case, referred to in the paper, the intestinal ferments were the cause of death. Nevertheless, in this case intestinal obstruction was a concomitant, if not a cause. Since the introduction of the Trendelenburg posture it had been noticed that there had been a number of fatal cases coming on without intestinal obstruction. In these cases, the peculiar feature was the sudden and severe shock, followed by high temperature, a rapid, small pulse, and clear mental perception until the end, which came usually in about three days. The field certainly demanded wider consideration and deeper knowledge, and a further investigation of the material which was regurgitated from the intestine, and which, in all probability, did generate a virulent, and usually fatal, poison.

DR. THOMAS H. MANLEY, of New York county, said that in connection with this exceedingly important paper he desired to remind those present that abdominal surgery was not yet free from danger. The first of the four medical cases presented many features of malignant disease, and the diagnosis made was not confirmed by autopsy. Notwithstanding the acute onset, he felt very confident that the symptoms were due to malignant disease. He was reminded of a point emphasized by Broadbent, that when

dark "coffee grounds" vomiting was present, in a young male subject, the condition was probably sarcoma, whereas in a young female, the affection was probably non-malignant, and due to gastric ulcer. He would not deny the important action probably played by the ferments in the second class of cases reported, for here came in the important question of vital resistance. After very many laparotomies shock was great, yet fermentation did not result until there was a certain diminution of the vital forces. His own experience in abdominal surgery had led him to believe that with few exceptions the regurgitation of brown matter results from a parietic condition or an obstruction of the bowel. In this view, he heartily coincided with Dr. Marcy. He was of the opinion that the formation of intestinal adhesions after these operations was the primary cause of these dangerous conditions, and that the micro-organisms played only a secondary part.

## TWO INTERESTING CASES OF SURGERY OF THE KIDNEY.

By J. E. JANVRIN, M. D., of New York County.

*October 14, 1896.*

Instead of preparing a paper upon one particular subject, I have thought it best to relate in a brief manner two very interesting and instructive cases of surgery of the kidney, which have fallen to my lot quite recently, in the hope that their recital, particularly the first case, will be productive of a general discussion which may help to settle some of the rather indefinite points as to the propriety of the removal of the kidney under certain conditions:

CASE 1.—Multiple abscess of left kidney, complicated by Bright's disease. Nephrectomy. Death from sepsis and uraemic poison six days subsequent to operation.

Mrs. F., age twenty-five years, came under my observation, May 15, 1896. She had been an invalid for several years; and as the result of myelitis, had been paralysed in both legs and at the same time, as the result of paralysis of the bladder, had suffered severely from cystitis for some two years or more.

She had come to the city some two weeks prior to my seeing her in consultation with the attending physician, and a week subsequent to her arrival had been suddenly seized with chills, followed by high temperature and much stupor. The doctor had carefully examined the urine and found evidences of Bright's disease and cystitis. He had treated her for a week, but she had been gradually going from bad to worse. After going over the history carefully and making a thorough physical examination, I became convinced that the patient was also suffering from chronic pyelitis of the left kidney, and that the symptoms from which she was particularly suffering at that time were those of sepsis due to the absorption of pus.

This opinion was not concurred in by the attending physician. Consequently, Dr. Delafield was added to the consultation. Dr.



Delafield fully concurred with me as to the sepsis, but was non-committal as to whether the pyelitis was confined to the one kidney or implicated both.

In order to settle the point I decided, with the consent of the attending physician, upon catheterising both ureters.

On the 20th, Dr. Brooks Welles, with my assistance, catheterised the ureters and the two specimens of urine were carefully examined—that from the right showing albumen, hyaline, and granular casts, but being absolutely free from pus, while that from the left showed albumen and casts and also a large amount of pus. The ratio of the amount of urine from the two kidneys was as five to one, thus showing that the right kidney was practically doing all the excretory work.

The patient's condition had not improved. In fact, she was *in extremis*; profoundly septic with extremely feeble heart, recurrent chills and profound stupor the greater part of the time.

Notwithstanding the unpromising conditions, as far as operative interference was concerned, I advised cutting down upon the kidney and draining it; and if the conditions were found such as to warrant its extirpation, then to remove it at once. Dr. Polk saw the case in consultation and fully agreed as to the propriety of making drainage, but was very decided in his opinion that the patient could not stand a nephrectomy, believing that she would "die under the operation."

During this time she had been thoroughly stimulated and nourished, both by the stomach and hypodermatically. She had also been given quinine and salol in large doses and also, as the condition demanded, moderate doses of digitalis, hypodermatically or by the mouth.

May 22, patient removed to my sanitarium during the evening. She was unconscious and remained so during the night. Early in the morning, she came out from the stupor, and at nine o'clock, after having swallowed a little brandy, she was anaesthetised with chloroform. As she was large and stout I made a free incision from the rib to the crest of the ilium. The cut was rapidly carried down to the kidney, and then passing my fingers around it I found it to be a mass of broken down tissue, hardly a spot of which was not in a necrotic condition, and filled with abscesses.

With such an amount of disease it was evident that the patient would be better off with the kidney removed, rather than simply drained. Her pulse was good and there had been no shock attending the operation. I therefore removed it, one small, superficial

abscess being ruptured during the enucleation ; the pedicle was ligated with catgut ; cavity washed out with sterilised water and packed with iodoform gauze, and the patient put back to bed within half an hour from the beginning of the operation, not more than two drachms of blood having been lost during the operation and the patient in better condition than she had been at any time during the two or three preceding days.

It had been my hope that with the removal of the foci of pus the septic condition would be greatly relieved at once and that possibly the relief would be such as to bring her up to a point at which a proper treatment of the Bright's disease would prolong life for some months, possible even a few years.

As regards relief from sepsis I was not mistaken. Her intellect cleared, pulse became more firm and regular ; there was no recurrence of chills or high temperature, and for five days there was no diminution in the amount of urine, it averaging thirty ounces daily. Of course the albumen and casts continued, but there was scarcely any pus, and what there was evidently came from the bladder. The amount of urea, which, during the week preceding the operation had averaged about five grains to the ounce, was slightly increased, and on the third and fourth days was as high as eight grains to the ounce. Free and satisfactory drainage continued all the time from the cavity.

On the evening of the fifth day purpuric spots made their appearance upon the feet and legs, and together with their appearance the extremities became cold and clammy. Reaction, however, followed the hypodermic administration of strychnine and brandy. The following morning, after a good night's sleep, condition about the same as during the preceding day. As the day passed the urine decreased somewhat and the symptoms of uraemia became a little more decided. Still the pulse held good and she took milk freely and with apparent relish.

About 6 p. m., the heart's action became more rapid and feeble, but responded quickly to hypodermic of strychnine and digitalis. Suddenly, at nine o'clock, she asked the nurse for a drink of water ; took it readily and then, turning her head upon the pillow, ceased breathing, her nervous powers having been thoroughly exhausted by the long-continued sepsis and uremia.

The kidney, examined after removal, was, as before stated, a mass of necrotic tissue, interspersed with pus cavities. So thoroughly was it disintegrated that it literally collapsed under the slightest manipulation.

One uric acid calculus, about the size of a large pea, was found in its pelvis. The previous history of the patient, as obtained from the family physician, showed only one attack of illness which could be interpreted as indicative of pyelitis, and that attack had occurred only eight weeks prior to the patient's death. The symptoms at that time, however, had been considered as due to a bilious and malarial condition and had yielded to quinine and mercurials.

It is rather surprising that the Bright's disease and pyelitis could both have existed, as they certainly had, for some months without producing symptoms of sufficient magnitude to arrest the attention of her family physician; but such must have been the case, and until the attack which had occurred some two months prior to the fatal illness the symptoms had been so masked that neither the Bright's disease nor pyelitis had been suspected.

It is, in my opinion, hardly possible that the extreme amount of degeneration of the kidney could have resulted from this one attack, dating back only two months. I believe the pyelitis had been going on for several months, possibly a year. This is one of the points to which I wish to call the attention of the members in the discussion. The other point is this: Whether, with the condition in which the kidney was found at the operation, it was best to *remove* it or simply to have drained it. To my mind its removal was absolutely demanded.

CASE II.—Fibro lipoma developing from the capsule of the left kidney. Removal by laparotomy. Recovery.

Mrs. S., age sixty-three years, came under my observation during the latter part of June, 1896. She had had for some seven or eight years an enlargement in the left side of the abdominal cavity, which had grown very slowly up to the three months previous to my seeing her. It had then begun to increase rapidly. It had been diagnosed as a fibroid of the uterus with a very thin and long pedicle, or possibly a fibroid ovary. There had been very little pain up to two months prior to June, the principal trouble being its size and the inconvenience from pressure and the fact that it was producing emaciation and exhaustion. Physical exami-

nation revealed a growth somewhat irregular in shape, as large as a good-sized cocoanut, filling the left kidney space and dipping down into the left pelvic cavity, with a projection as large as the fist passing over to the right across the median line.

The uterus and appendages were normal and the growth had no connection with the uterus, as far as could be determined. It was solid and not painful to the touch. My diagnosis was a probable sarcoma of the left kidney, and I advised removal.

On the seventh of July she entered my sanitarium and on the morning of the eighth I made a laparotomy, cutting through the abdominal wall three inches to the left of the median line. The growth was of such size that I had decided that it could be much more readily removed in this manner than by any other. In cutting through the abdominal peritoneum the large intestine was found strongly adherent to it, and the incision penetrated the peritoneal covering of the intestine. The adhesions being separated, the edges of the peritoneal covering of the intestine were brought together by continuous suturing with fine silk. The intestines then being pushed over to the right side, an incision was made through the posterior peritoneum down upon the growth, and the process of enucleation begun. On coming down upon the anterior surface of the mass, it at once became apparent from its waxy and glistening appearance that it was not a malignant growth. It had the appearance of a lipoma. Proceeding carefully with the dissection, I soon found that the foreign growth was simply attached to, or an offshoot from, the capsule of the kidney, the kidney itself having been pushed over to the right beyond the median line and the growth itself not only filling up the normal kidney space but encroaching anteriorly and downward. The attachment to the capsule was circular and fully an inch and a half in diameter. The tumor was easily detached and lifted out, the slightly bleeding vessels of the capsule being controlled by continuous catgut, suturing of the capsule itself. A counter incision was made through the back, and an iodoform gauze packing applied so as to establish drainage in that direction, and the kidney pushed up into its normal position. The posterior peritoneum was then closed by continuous catgut sutures, the intestines allowed to resume their normal position, and the abdominal incision closed by silver wire sutures. A firm compress was applied upon the left abdominal wall beneath the bandage, to give support to the kidney.

Patient was kept upon the back and left side for four days. The



drainage through the posterior incision was free and simply serous in character. It continued for two weeks, the gauze drain being removed on several occasions and replaced by a smaller one. At the end of three weeks, both incisions had permanently healed and the patient left the sanitarium.

I am convinced that in selecting the route for removal through the abdominal cavity I acted wisely. It gave me room in which to work, and to *see* the growth as I came down upon it and in that way to recognise quickly the fact that the tumor was an outgrowth from the kidney capsule and the kidney itself was not implicated in the morbid condition.

In that way no injury was done the kidney but it was replaced and left in its normal position, and of course the shock from the operation was much less than it would have been if the kidney had been so injured as to necessitate its removal. The specimen has been examined by Dr. Vissman, the pathologist of the New York Polyclinic, and pronounced a fibro lipoma and I am informed by Dr. Vissman that the capsule of the kidney is one of the favourite sites for the development of this variety of growths; and furthermore, that the probability of other growths of the same character in the immediate vicinity is quite certain, sometime in the future, though hardly to be expected for several years.

# THE PALLIATIVE TREATMENT OF CANCER OF THE CERVIX UTERI AND BLADDER IN WOMEN.

By NATHAN G. BOZEMAN, M. D., of New York County.

*October 14, 1896.*

I must beg your indulgence for not having a more elaborate paper to read before you; for I shall confine my remarks to the treatment of carcinoma of the cervix uteri and the bladder in the stage of the disease when any operative measure may be of doubtful expediency, or in cases where operations have been undertaken and the disease still progresses, the condition of the patients being most distressing from haemorrhage, sepsis, incontinence of urine, and all the evils resulting therefrom. My interest has been aroused in this class of patients, and no doubt you feel the same, because of their hopeless condition and the difficulty of caring for them in our public hospitals. Of course any treatment will be directed to alleviating their suffering and rendering their surroundings as wholesome as possible.

Women afflicted with inoperable epithelioma of the cervix uteri when they are not undergoing any treatment complain most frequently of haemorrhage and a foul-smelling bloody discharge from the vagina. The vaginal examination reveals a hard, unyielding band of sclerotic tissue in front of the cervix, extending nearly around the vagina, and constricting it; beyond this is the diseased cervix which is either destroyed, leaving a deep cavity with necrotic walls, or there may be a cauliflower growth on the cervix. Usually, digital examination causes excessive haemorrhage, which is controlled by placing the patient in the supported knee-chest position, exposing the cervix by introducing a perinaeal eleva-

tor, guided by the finger, and gently brushing over the bleeding surface with a solution of persulphate of iron, or, if necessary, touching it with the Paquelin cautery, then packing or columning the vagina with dry cotton. Great caution must always be observed not to injure the ulcerated surface with the end of the speculum; this accident I have found causes more bleeding than the digital examination. To guard against this I also use the knee-elbow position.

In some cases the first indication is to overcome the partial stricture of the vagina to which I have referred, in order to gain free access to the disease and to allow the uninterrupted escape of the discharges. This is accomplished by means of hard rubber, intravaginal dilators of suitable sizes to admit of easy introduction; they are worn for several hours a day and are removed for douching. This gradual dilatation is continued until the contraction has yielded; the treatment sometimes is painful and has to be alternated with columning the vagina. The column of antiseptic gauze and dry cotton I employ in all cases after first dusting on aristol or some other antiseptic powder, for a two-fold reason: pressure and absorption of the secretions. When it is properly introduced it may be worn forty-eight hours, then removed for thorough vaginal douching during the next twenty-four hours. It produces pressure on the diseased surface and against the constricting band in the vaginal wall. The secretions are retained in it for a considerable time and it prevents bleeding, consequently the surface of the ulcer is maintained in a fairly clean state. I treat my patients about three times a week and I find that they are kept quite free of pain and are not annoyed by the discharges. The disease has a natural tendency to extend, but in none of my cases has a perforation occurred into the rectum. I have had several where the bladder became involved, and here is where I believe most of the pain from the disease begins. The first manifestation of the extension to the bladder is a severe form of cystitis with excessive vesical tenesmus and frequent urination; but when the perforation of the vesico-

vaginal septum takes places, and the urine finds a free outlet, all these painful symptoms subside. A vesico-vaginal fistula is then established and the bladder has physiological rest.

Some of us are familiar with the pitiable and loathsome condition of urinary fistula cases in former times, when the sloughing of the vaginal and bladder walls was due to prolonged pressure of the head in the parturient state, and we all know of the successes of my father in his untiring efforts to close these openings and restore such patients to health, so that now by following his teachings we are enabled to close all forms of vesico-vaginal fistulae. Those caused by carcinomatous ulceration, however, should never be closed; we must content ourselves with other means of treatment.

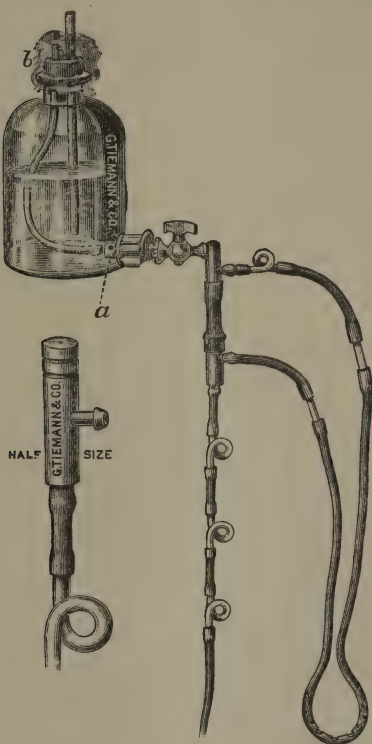
In three cases, which I have had under observation, I have used continuous irrigation of the vagina and bladder, alternating with Dr. Nathan Bozeman's vesical drainage support which is worn in the vagina and collects the urine and conducts it into a soft rubber receptacle which is attached at the knee.

Now, as to the continuous irrigation, when this process is kept up for any length of time, we must, of course, economise the fluid which we use, so I have had constructed an irrigator<sup>1</sup> which does this by mixing air with the solution, and the two, while coursing through a perforated tube in the vagina, when the patient is in a recumbent or sitting posture, produce a current which carries off with it all secretions and particles of debris. The reservoir, a glass bottle, stands upon a table near the bed, and is connected with the perforated tube in the vagina. The bottle has a constant outflow, that is, as the fluid escapes from it by the opening at the bottom, air passes down the long glass tube and takes its place. The pressure is thus maintained constant and it is represented by the weight of the column of fluid extending from the lower end of the perpendicular

<sup>1</sup> "An Air and Water Irrigator and Drain for Prolonged Douching in Deep Cavities." *New York Medical Journal* for May 27, 1893.



glass tube to the circular opening at the bottom of the vessel. The stop-cock does not regulate the velocity of the efflux, but shuts off or turns on the flow. A certain proportion of the fluid as it escapes from the bottle collects in a small reservoir, where it is also maintained at a constant level. In the bottom of it is a round opening, the area of



which is such that with a column of liquid two inches high, one half an ounce escapes per minute; this is made to produce suction. The excess collects in an intermittent syphon and is discharged by it. The suction pump and the intermittent syphon being connected with the perforated tube in the vagina, alternating columns of air and fluid pass quickly through it, carrying off with them the urine as it

is secreted. Three hours is about the longest time that a bottle holding one gallon will irrigate and drain. I have now under observation a patient who has been using the irrigator with very great comfort to herself for nearly a year. In her case I am also making applications once a week of hydrogen peroxide. The upper portion of the vagina, the cervix, and the bladder are destroyed but still she can be drained, and is comparatively easy. In summing up I would recommend :

1. Keep the seat of the disease in an aseptic condition.
2. Prevent or counteract any narrowing of the vagina in front of the disease.
3. When the bladder becomes involved use effective irrigation and drainage to carry off the urine as soon as it is secreted.

#### DISCUSSION.

DR. JANVRIN, of New York county, asked whether plain water was used, or some antiseptic.

DR. BOZEMAN said that he ordinarily employed sterilised water, but he had used carbolic acid solution occasionally.

DR. JANVRIN said that he had been much interested in this paper for the reason that anything which could give any comfort to these unfortunates, suffering from cancer of the bladder and neck of the womb, was always acceptable to the physician. In his own experience in the gynaecological service of the Skin and Cancer Hospital, where there was a large number of inoperable cases, he had always endeavoured to keep the parts as clean as possible, avoid excoriation from the urine, and do everything else possible for the comfort of the patient. Dry dressings had seemed to him the best, but he would certainly make use of this irrigating apparatus. He had found that when these advanced cases came to the hospital—and he saw many more of these cases ten or twelve years ago than now, because of more prompt resort to operative methods—the best plan of treatment was to dilate the canal and secure free access through the vagina. The next step was to remove by curetting all the necrotic and diseased tissue, even though in doing this a perforation were made into the bladder. In most of these advanced cases there would be, as a result of the pathological process, sooner or later, an opening into the bladder.

This he looked upon as a rather fortunate accident, because it relieved the patient of the tenesmus. Having done this, it was most important to keep the bladder as clean as possible. In order to efficiently use such dry powders as iodoform, it was necessary each time to thoroughly wash the parts and sponge them with absorbent cotton. Sometimes tannin and glycerin together on tampons act nicely; but ordinarily, he preferred to dress the parts two or three times a week with some one of the dry applications.

## THE BROMIDES AS A CURE FOR DIPHTHERIA.

By ROBERT ABERDEIN, M. D., of Onondaga County.

*October 14, 1896.*

It is my purpose to-day to offer for your consideration a simple leaf from my daily practice. I am constrained to believe that it will suggest a line of thought to every practitioner of medicine who admits that the science he pursues is still open to the developments of discovery.

In the year 1888, Dr. Knight, superintendent of the Idiot Asylum at Lakeville, Conn., told me that the previous year they had a very severe epidemic of diphtheria in their institution; it resulted fatally in a number of cases, despite their efforts to stamp it out according to the usual treatment. He noticed, however, that in one ward—the epileptic—there were only a few cases in proportion to the number of inmates, and these of a mild type, none having died. Wondering why this should be, while in the other wards the disease was so severe, he noticed that all were taking the same medicine,—the bromides—according to their various needs. He determined to test the virtue of this drug in the other wards, and to his amazement and delight he found that all who took the treatment improved rapidly. There were no further fatalities in the institution. Convinced of the efficacy of the treatment, Dr. Knight imparted to a few medical friends his experience, and from the results in cases under their care he was fully assured of the value of his discovery.

He did not attempt to account for this unlooked for action of the bromides, their chemical composition not being considered sufficiently antiseptic to destroy so virulent a poison, yet with the results before him he had the fullest proof of their power.



I determined to try the remedy at the first opportunity, which was not until the following year. A gentleman and lady who came to a summer resort were assigned rooms in a cottage which had been occupied a short time before by a family in which the child had had quite a sore throat. This I learned on subsequent inquiry. In a few days, the lady complained of a sore throat. As I was there at the time, I prescribed a mild solution of bromide of ammonium, and in four or five days she was well enough to return home, as she thought the air did not agree with her. As I was only there for over Sunday, and saw her but once, I did not consider it diphtheria.

Shortly after they vacated the rooms, they were taken by a gentleman from Philadelphia, with his family, consisting of wife and four children. In a few days the eldest daughter, a girl of about fourteen years, was taken quite ill, and I, having by this time joined my family for a few weeks' vacation, was called in. This proved to be a well-marked case of diphtheria. Nothing was said of it at the hotel, but those in actual attendance were quarantined, and the house was thoroughly disinfected and fumigated. The patient was put on the bromide of ammonium, and made a rapid recovery. The membrane disappeared entirely by the sixth day, and although the nasopharynx was also affected, there were no sanguino purulent discharges from the nostrils, which I had previously always noticed in other cases. The youngest child in the same family, a boy of two years, was also attacked. The medicine was given in small doses, as a preventative, once or twice daily; the disease ran a rapid course, and the patient made a satisfactory recovery.

My next opportunity to note the results of the bromide treatment occurred in my home practice at Syracuse. The case was in a family of four children, the eldest of whom, aged seven years, was attacked at night with severe vomiting. I saw the patient at 8 a. m., and from careful notes made during the progress of the case I have compiled this review:

*First Day.*—High fever. Temperature, 104 1-5. Pulse, 158. Face very red and neck swollen. Tonsils and uvula covered with a thick, yellowish membrane. Tongue coated. Drowsy.

I left a solution of bromide of ammonium (two drachms to four ounces of water), with directions to gargle, first with warm water, to clear away the viscid mucus, then a teaspoonful of the solution in as much warm water, to gargle and spit out, another to swallow on alternate hours. Salt pork to be applied from ear to ear. A diet of milk was ordered.

At 7 p. m., when I called the second time, the temperature was 102 and the pulse 120. The patient was much easier, and had taken seven ounces of milk. I directed that the medicine should be continued while awake, and that the application of pork should be changed every twelve hours. The patient had urinated twice, about ten ounces in all.

*Second Day.*—9 a. m. Temperature, 101 1-10. Pulse, 114. Rested during the night fairly well. Took medicine four times. Throat not so congested, and membrane very moist and fringed with pus.

I directed that the medicine be continued as before, giving plenty of milk, and ten drops of alcohol in sweetened water every three hours. At this hour the patient had not urinated; called again at 6 p. m., patient felt much better, had passed eight ounces of dark, straw-coloured urine at 11 a. m., and five ounces at 4:30 p. m., of a lighter colour. Drank ten ounces of milk during the day, and took the alcohol three times. The throat was clearer, and the membrane seemed smaller. Temperature, 100 4-5. Pulse, 118. Directed that spirits were to be given only when faintness developed, and that all the water wanted should be supplied.

*Third Day.*—10 a. m. Temperature, 100 3-10. Pulse, 96. Membrane much thinner. Some cough. Only had medicine three times after last call until 5 a. m. Then slept until 8 a. m. Since, has taken it on time. Took two teacupfuls of milk since 8 a. m.

I saw no necessity for another call that day.

*Fourth Day.*—10 a. m. Temperature, 100 1-5. Pulse, 98. Membrane shreddy and not so much of it. During the previous day, took milk toast twice and a small potion of clam juice and beef juice on bread. Slept through the night, waking only at 11:30 p. m., to urinate the second time. Wanted pork, which caused irritation, left off, but it was reapplied. At 5 a. m. of the fourth day took milk and slept until 7:30 a. m., when he urinated and his bowels moved.

I continued the bromide solution, with two hour intervals between the gargle and the medicine.

*Fifth Day.*—Noon. Temperature, 99 7-10. Pulse, 96. Membrane almost entirely disappeared. During the preceding day, the patient took chopped steak broiled quickly, drank milk, had milk toast, and a cup of chocolate.

The patient urinated and his bowels moved loosely while I was present. As slight faintness was apparent, I directed that he be kept very quiet, and that a small quantity of bovine be given frequently, with milk and milk toast. I ordered the alcohol to be given two or three times through the day.

*Sixth Day.*—Noon. Temperature, 99. Pulse, 100. Entire disappearance of membrane, but throat quite red. During the preceding day the patient had taken, between periods of normal rest, a little port wine and water, and a small quantity of milk, after which he threw up. One half hour after, took the alcohol and water, and for tea had milk toast with part of a poached egg. Took medicine three times, and gargled twice.

After this, as convalescence seemed to be progressing rapidly, although I called every day until the twelfth day, I took no notes, except to record the temperature and pulse. The temperature never went above 99, and the pulse ranged from 82 to 94. The medicine was continued every day until the sixteenth day, with five drops of tincture ferric chloride in each dose, administered at four-hour intervals. There were no sequelae.

I do not quote this as a typical case, but desire to review it as a representative instance of what the bromides did in what threatened to be a severe experience for a youthful patient. Two other children in the family were afflicted with sore throats, marked by the diphtheritic membrane, but as they, too, were treated with the bromides, and were secluded and nursed, their illness was in no respect alarming, and was of short duration.

In all I have treated thirty-eight cases of my own, and have seen several others in consultation with fellow-practitioners. In one of the latter, the doctor calling me said:

"The case is hopeless, but I thought it best to have you see it with me."

An examination satisfied me that my friend had taken too gloomy a view of the prospect.

"I only see them once a day, when they are no worse," was my offhand rejoinder.

"That is because the patient is dead when you call again," he replied.

"No, getting better," was my answer.

As a last resort, my skeptical friend consented to try the bromide treatment, and, at his solicitation, I prepared the solution and gave directions for its use. A week after, he told me that the patient was rapidly being restored to health.

In severe cases, I have used the permanganate of potash as a gargle and an injection for the nose when the membrane is sloughing and any odour is present. Nor do I delay in administering iron, quinine, strophanthus, or digitalis when there are the slightest indications demanding their use. Yet I feel so safe with the bromides that I consider them almost a specific.

Out of the thirty-eight cases which I have treated with the bromides I have lost only two, and neither of these really died of diphtheria, inasmuch as in each the false membrane had wholly disappeared. Both fatalities occurred in an orphan asylum to which I am the visiting physician. One was a child of five years, and the other of eight. These cases were distinguished by a sloughing off of the membrane and an accompanying odour of the most offensive kind. In both I used carbolic acid and permanganate of potash as a gargle and nasal douche. Each had repeated attacks of epistaxis, which, however, were easily controlled. At last, one on the ninth day, the other on the twelfth, seemed to be doing nicely, having taken an abundance of nourishment, the throat being clear, when, without any warning, they ceased to breathe.

I have not attempted in this paper to give more than a hurried account of the action of the bromides in this dread disease. I make no mention of the method of treating diphtheria according to the old rule, for that is a familiar theme. I have also refrained from entering into a discussion of the



virtue of anti-toxine, of the effects of which I have read many contradictory reports, because I have not made it a subject of practical demonstration. I have no prejudice against anti-toxine, but with an experience with the bromides as satisfactory as my own, I am fully content to place my dependence on them.

## THE DUTY OF THE PUBLIC TO THE PHYSICIAN.

By WILLIAM M. BEMUS, M. D., of Chautauqua County.

October 14, 1896.

My excuse for choosing the subject of this paper, "The Duty of the Public to the Physician," is, that recently I became the victim of a designing woman and her equally designing and disreputable attorney. It happened in this wise: The woman fell upon an icy sidewalk and produced a Colles fracture of her right wrist. She had intended suing the city of Jamestown for damages, but the time limit for so doing had expired before she consulted an attorney. However, the attorney was not to be beaten out of a lawsuit, especially as the woman had promised to give him half she made, and he immediately said, "Well, we can't sue the city; but what is the matter with suing your doctor? Who is he?" I was accordingly sued for \$5,000 damages in the supreme court. The judge refused to let the case go to the jury, saying the plaintiff had absolutely no case, and I did not have to pay the \$5,000; but I *did* have to pay a round sum for witness fees, traveling expenses, etc. The plaintiff being a widow, with "not one cent to her name," though she was directed to pay the costs, of course did no such thing. (Any one can sue a doctor, whether they own a dollar's worth of property or not. My case was a charity case.) Both before and during my trial I suffered considerably from anxiety as to the final result, not knowing anything of the law or what rights a physician had under the law. I could see bolts and bars appearing before me in both the waking and somnolent states. Thinking that I might possibly benefit some member of this Association by relating what I learned through

my trial, and by bringing before you at this time the most recent decisions and latest laws for your guidance and instruction in matters medico-legal, you will readily see that by so doing this paper will be for the most part a series of quotations, and that I am not to be accused of plagiarism after this frank avowal. Competent attorneys have gone over the ground with me, and the information I give you I can vouch for as correct.

As I have before mentioned, any one can sue his physician or surgeon—a charity patient, a pauper in the poorhouse, as well as the patient who pays. The pauper has nothing to lose and all to gain. He has nothing with which to pay costs. The judge may order that he do pay them; but you will find, as I did, that you, being the only responsible party, foot your own costs; that is, you are not guilty, but you have the bill to pay, just the same. Another thing: To a charity patient, one whom you know to be too poor to pay your fee, in the kindness of your heart, do not fail to send him or her a bill. The plaintiff's attorney will make the point that you were afraid to send any bill, knowing you had been guilty of a malpractice. You have the right, and it is your wisest course, to send a bill *in all cases*; and if you are so unfortunate as to have a surly or ignorant patient, make your bill a good, big one, and get judgment by suit, if he does not make an immediate settlement. A judgment, or the settlement of an account, is a bar to future litigation. The obligations of the two professions, law and medicine, are the same, and Judge McAdam says:

Physicians, surgeons, dentists, druggists, and lawyers, by holding themselves out to the world as such, impliedly contract that they possess the reasonable and ordinary qualifications of their profession, and are, consequently, under a duty to exercise reasonable and ordinary care, skill, and diligence toward those who employ them. The world has not time to inquire into the proficiency of every professional man; hence it presumes him to be furnished with that amount of skill which he is under obligation, by virtue of his calling, to possess. It may, and does, vary widely among men; but it must at least be sufficient to entitle him to a recog-

nised place among his own fraternity. If, therefore, by illegally assuming a title, or assuming one he is incompetent to fill, he holds himself out as a practitioner of any science, when he does not possess the required qualifications, and induces the public to employ him, he is a wrong-doer *ab initio*, and any person injured by his performances has an action against him.

#### MALPRACTICE DEFINED.

Malpractice is bad or unskilful practice in a physician, or other professional person, whereby injury is caused. Blackstone says, concerning it: "For it hath been solemnly resolved that Malpraxis is a great misdemeanour and offense at common law, whether it be for curiosity and experiment or by neglect, because it breaks the trust which the party had placed in his physician, and tends to the patient's destruction." (3 Black. Com., 122.)

Malpractice may be divided into three parts: 1. Wilful; 2. Negligent; 3. Ignorant.

Wilful takes place when the physician purposely administers medicines or performs an operation which he knows and expects will result in damage or death to the individual under his care.

Negligent malpractice comprehends those cases where there is no criminal or dishonest object, and includes gross negligence of that attention which the situation of the patient requires.

Ignorant malpractice is the administration of treatment calculated to do injury, and which does harm, and that which a scientific medical man would know was not proper.

Malpractice can only be affirmed where the physician has set aside established principles and neglected to employ means which are universally held to be necessary in the given case. If medical men fail to discharge their duty in a skilful and attentive manner, the law will grant redress to the party injured by their neglect or ignorance, in the form of an action on the case, as for a tortious misconduct, and no fees can be recovered.

#### TESTS OF RESPONSIBILITY.

Express malice, or an intent to commit a personal or social wrong, always makes the practitioner criminally responsible. As physis and salves were in use before physicians and surgeons, the common law provided that if a party employ a person as a surgeon, knowing him not to be one, he had no civil remedy; yet if a person of no medical education, in a case where professional aid might



be obtained, undertakes to administer medicine which may have a dangerous effect, and thereby occasions death, such person is guilty of manslaughter.

Many of these matters are now regulated by statutes, which prescribe the rights and liabilities of medical men and those who assume to practise as such without the necessary credentials. These provisions in the different states are, of course, controlling. In an action against a physician for malpractice, the question is not whether he is skilled in his profession, but whether he treated this particular case properly. The question of skill in his profession is material, but not controlling, the main contention being whether he treated the case in hand according to scientific principles.

The physician has no exclusive privilege of absolution from wrong-doing. He derives none from his profession, and becomes responsible, therefore, for any damages to the health, or for any disfigurement of the person of a patient, which are directly traceable to his want of skill or diligence.

#### WHAT CONSTITUTES SKILL AND DILIGENCE BY MEDICAL MEN.

The reasonable and ordinary care, skill, and diligence which the law requires of physicians and surgeons is such as physicians and surgeons, in the same general neighbourhood, in the same general line of practice, ordinarily have and exercise in like cases. In a Pennsylvania case, a surgeon was sued for alleged malpractice in the setting and treatment of a broken limb. The court charged the jury, "That the defendant was bound to bring to his aid the skill necessary for a surgeon to set the leg so as to make it straight and of equal length with the other, when healed; and if he did not, he was accountable in damages, just as a stone-mason or brick-layer would be in building a wall of poor materials, and the wall fell down; or if they built a chimney and it would smoke by reason of want of skill in its construction. They could not only recover for building, but would be accountable for damages." This ruling was reversed on appeal, and the appellate court laid down this rule:

"The implied contract of a physician and surgeon is not to cure,—to restore a limb to its natural perfectness,—but to treat the case with diligence and skill. The fracture may be so complicated that no skill vouchsafed to man can restore original straightness and length; or the patient may, by wilful disregard of the surgeon's directions, impair the effect of the best conceived mea-

tures. He deals not with insensate matter, like the stone-mason or bricklayer, who can choose their materials and adjust them according to mathematical lines; but he has a suffering human being to treat, a nervous system to tranquilise, and a will to regulate and control."

The true measure of skill required is that ordinarily exercised in the profession by the members thereof as a body—that is, the average of the reasonable skill and diligence ordinarily exercised by the profession as a whole, not that exercised by the thoroughly educated or well educated.

The medical man must not only possess the required skill, but must exercise it in the case at hand, and in a manner best calculated to bring about beneficial results.

#### DIFFERENT SCHOOLS OF MEDICINE.

The law does not favour any particular school of medicine, and the treatment of a physician is to be tested by the principles of that school to which he belongs.

#### SKILL REQUIRED OF EMPIRICS.

One not a regular physician, but holding himself out as capable of treating particular maladies, is bound to exercise the skill and care of the general physicians in the treatment of such maladies. This upon the ground that the law makes no allowance for quackery; it demands qualifications in the profession, and will require empirics to make their professions of skill and ability good, or answer for the consequences. The same rule has been applied to clairvoyants. For unskilful treatment, the attendant is liable.

It is sufficient to sustain a verdict, that the party held himself out as a physician. Issuing circulars signed with his name, having "Dr." prefixed, is enough.

#### EFFECT OF LOCALITY UPON STANDARD OR SKILL.

As the law discriminates between the metropolitan and rural bar, so it distinguishes between the city and country physician, but providing that the locality in which the physician or surgeon practises is to be taken into account. One practising in a small town or sparsely settled country district is not to be expected to exercise the care and skill of one residing in, and having the opportunities afforded by, a large city. He is bound to exercise the average degree of skill possessed by the profession in such localities generally.

The term "rural practitioner" here used refers to those who practise in small towns away from the facilities of the "metropolitan practitioner," and not to those in populous places near the cities, where the opportunities of the different practitioners are equal. Negligence is the abuse of care, according to the circumstances; and the law, exacting as it is in many matters, does not require impossibilities or hold people to implied responsibilities, which, in the nature of things, they never intended to assume. The implied obligation in this regard may be said to be that which both parties must have understood, but did not deem necessary to express.

#### STATUS OF SPECIALISTS.

A professional man who devotes himself to a particular branch of his calling, legal, medical, or surgical, and holds himself out as a specialist therein, impliedly undertakes that he possesses superior knowledge and ability in respect thereto, as well as its technics, and the degree of skill demanded of him must, in the nature of things, conform to the grandeur of his representations, express or implied.

An oculist may be held liable for failure to exercise as high a degree of skill as other surgeons of the specialty exercise, when he holds himself out as possessing such skill.

#### NO IMPLIED WARRANTY TO CURE.

We have found that the lawyer neither guarantees the success of his proceedings in a suit, nor the soundness of his opinions. The same rule applies to the medical man.

There is no implied warranty on his part that he will effect a cure. Failure of a surgeon to accomplish the desired result does not of itself render him liable for malpractice; the test is, whether he has exercised reasonable skill and attention in his treatment. His obligation, like that of the lawyer, is merely to bring to the case in hand the average skill of the profession in the vicinity, with the care commensurate to its importance and the consequences likely to follow.

#### ERRORS OF JUDGMENT.

Medical men, like lawyers, are not liable for mere errors of judgment, unless it be so gross as to be inconsistent with reasonable care, skill, and diligence.

Thus in *Fisher v. Nicholls* (2 Ill. App., 484,) the appellant asked the court to instruct the jury "that if they believe the defendants

used ordinary skill and care in the treatment of the plaintiff's hand, and made a mistake in judgment, then the defendants are not liable for the result of such mistake under law."

This instruction the court refused to give as asked, but gave it with the following modification: "Provided the defendants, in making up their judgment, did not disregard the well-settled rules and principles of medical science." This request, as modified, conforms to the rule already laid down concerning that bestowed by the medical man to his patient.

The burden of proof is upon the plaintiff in all actions for malpractice to show that there was a want of due care, skill, and diligence, and that the injury was the direct result of such want.

The mere failure to effect a cure raises no presumption of a want of care or skill.

A physician and surgeon engages to bring to the treatment of his patient, care, skill, and knowledge, and while, when exercising these, he is not responsible for mere errors in judgment, he is chargeable with knowledge of the probable consequence of an injury, or of neglect in his treatment or unskilful treatment.

#### ERRORS IN DIAGNOSIS.

An error in diagnosis is sure to be followed by improper treatment and is, therefore, of importance.

The courts have held that the right of a physician to be compensated for his services depends upon the diligent exercise under his employment of the skill which commonly pertains to his profession; that the rule applies as well to the ascertainment of the patient's disease as to its treatment, and the fact that the physician erred as to the disease and treated the patient for one he did not have, will not defeat the physician of compensation.

A surgeon possessed of the requisite knowledge is not responsible for errors of judgment or mistakes in a case in which there are reasonable grounds of doubt and difference of opinion, but is chargeable only with error arising from want or failure to exercise reasonable skill and diligence.

In *Gedney v. Kingsley*, (41 St. R. 794 s. c., 16 Suppl. 792,) it appeared that the plaintiff injured her arm, and defendant (a surgeon) examined it, but discovered nothing more serious than a bad bruise. In fact, the arm was fractured, and by reason of delay in discovering the fracture, the injury became irreparable. In an action for damages, the defendant's evidence tended to show that the arm was so swollen that a complete examination could not be



made, and that plaintiff told him not to call again until she sent for him. Held, that if this were found to be true, no recovery could be had.

#### CONSENT TO SURGICAL OPERATIONS.

If physicians attending a woman deem it necessary, for the prolongation of her life, to perform an operation, they are justified in doing so, if she consents, whether her husband consents or not. As a rule, anything warranted by good practice and not objected to by the patient is authorised. This is evidenced by the numerous operations constantly performed in efforts to save or prolong life, some of which result disastrously, and yet no one would impute either malpractice or manslaughter. These are more than offset by the numerous and sometimes marvelous results of a beneficial character, brought about by similar operations upon others.

#### GRATUITOUS SERVICES.

The mere fact that a physician or surgeon renders services gratuitously does not affect his duty to exercise reasonable and ordinary care, skill, and diligence.

Treating a patient gratuitously gives no license to experiment on him or to do anything negligent towards him. He puts himself in professional hands, and has the right to expect medical treatment according to the ability of the physician or surgeon in charge. "It is the duty of every artificer to exercise his art rightly and truly as he ought." This is peculiarly the duty of professional practitioners, to whom the highest interests of man are often necessarily intrusted. The law has no allowance for quackery. It demands qualification in the profession practised, not extraordinary skill, such as belongs only to a few men of rare genius and endowments, but that degree which ordinarily characterises the profession.

A physician employed by a city to treat patients in an almshouse will not be relieved from liability to a patient therein for failure to exercise ordinary care and skill, although he is paid by the city and not by the patient.

#### CONSULTATION WITH OTHERS.

If a physician or surgeon feels that he is not competent, or is not competent, to treat a case properly, it is his duty to recommend the employment of another, but if he is competent, and so considers himself, and is in doubt concerning the case, he should

use his best judgment as to consultation with other physicians or surgeons. He cannot bring in consulting physicians or surgeons without the consent of the patient, so as to obligate him to pay their fees, unless, perhaps, in a very extreme case, where dire necessity furnishes the authority.

#### ADOPTION OF LATEST METHODS AND APPLIANCES.

Physicians and surgeons should keep up with the latest advance in medical science, and use the latest and most improved methods and appliances, having regard to the general practice of the profession in the locality where they practise, and it is a question for the jury to decide from all the circumstances of the case, whether the physician or surgeon has fulfilled his duty in that respect.

If they depart from generally approved methods of practice, and the patient suffers injury thereby, the medical practitioner will be held liable, no matter how honest his intentions or expectations were of benefit to the patient.

The failure to use the most improved methods is not conclusive evidence of negligence. If those used were reasonably safe, and such as were employed by other reputable practitioners in the neighbourhood, no liability is incurred. Yet it is advisable for all to recognise the progress of science and to keep abreast of it, to avoid charges which are easily made and are lasting in their effects, though unwarrantable by the facts.

#### PARTNERSHIP LIABILITY.

All the partners are liable for malpractice by any member of the firm. The ground of liability is the contractual relation, for the gist of the action is its breach, either by malpractice or misfeasance.

#### CONTRIBUTORY NEGLIGENCE OF PATIENT.

If the patient in any way contributes to the injury by his fault or neglect, he cannot recover for malpractice by the physician or surgeon.

If the patient, by refusing to adopt the remedies or comply with the directions of the physician, frustrates or defeats the endeavours of the physician, or if he aggravates the case by his misconduct, he cannot charge to the physician the consequences due directly to himself.

When a liability for malpractice is established, proof that the patient, after the liability was incurred, disobeyed the orders of

the physician and so aggravated the liability, it simply goes in mitigation of damages.

DOCTORS MUST KEEP SOBER.

There is no law, except that of propriety, which requires a lawyer to remain sober, but an express statute enjoins this upon the medical fraternity in these words: "A physician or surgeon, or person practising as such, who, being in a state of intoxication, administers any poison, drug, or medicine, or does any other act, as a physician or surgeon, to another person, by which the life of the latter is endangered, or his health seriously affected, is guilty of a misdemeanour." Another section provides: "A physician or surgeon, or person practising as such, who, being in a state of intoxication, without a design to effect death, administers a poisonous drug or medicine, or does any other act, as a physician or surgeon, to another person which produces the death of the latter, is guilty of manslaughter in the second degree." Medical men who decline to drink on account of these admonitions may be looked upon, therefore, as models of "statutory sobriety."

DOCTORS SHOULD BE LAWYERS AND VICE VERSA.

Blackstone, in his "Commentaries," says: "The science of medical jurisprudence has, of late years, attained to especial prominence and importance, inasmuch, also, as the evidence of skilled witnesses is justly deemed entitled of much weight, some general acquaintance with legal principles and the nature of criminal offenses is suggested for those professing the faculty of physic as desirable and useful." Apropos to this, let us add the suggestion that inasmuch as there are many cases of contested wills in which the testamentary capacity of the testator is called in question, and many cases of especial prominence and importance wherein the mental condition of the principal party is directly in issue, some general acquaintance with the medical science, and the nature, cause, and effects of such things, is suggested for those professing the profession of the law, as not only desirable and useful but necessary to the proper presentation and protection of the rights of their client, and the proper cross-examination of the medical experts. The one would seem to follow the other as the night the day.

QUACKS AND SHYSTERS.

In an action for libel, it was said that the designation, "pettifogging shyster," must mean an unscrupulous practitioner who

disgraces his profession by doing mean work, and resorts to sharp practice to do it.

It would be a good thing for the public, as well as for the two learned professions, if the ignorant pretenders referred to were obliged to designate themselves "quack doctors" and "shyster lawyers" upon their signs and cards. The government, during the war, stamped upon every bogus greenback it came across, the word "counterfeit." These cabalistic marks prevented imposition.

The suggestion made, if carried out, would save the good name of the legal and medical professions from much of the abuse they now receive.

Under article 8, chapter 661, of the Laws of 1893, entitled "An Act in relation to the Public Health," constituting chapter 25 of the General Laws, are to be found the regulations relating to the practice of medicine.

Section 153, of the last mentioned article, was amended by chapter 398 of the Laws of 1895, to read as follows:

Section 153. Penalties and their collection.—Any person who, not being then lawfully authorised to practise medicine within this state and so registered according to law, shall practise medicine within this state without lawful registration, or in violation of any provision of this article; and any person who shall buy, sell, or fraudulently obtain any medical diploma, license, record, or registration, or who shall aid or abet such buying, selling, or fraudulently obtaining, or who shall practise medicine under cover of any medical diploma, license, record, or registration illegally obtained, or signed, or issued unlawfully or under fraudulent representations or mistake of fact in a material regard, or who, after conviction of a felony, shall attempt to practise medicine, or shall so practise, and any person who shall append the letters M. D. to his or her name, or shall assume or advertise the title of doctor (or any title which shall show or tend to show that the person assuming or advertising the same is a practitioner of any of the branches of medicine), in such a manner as to convey the impression that he or she is a legal practitioner of medicine or of any of its branches, without having legally received the medical degree, or without having received a license which constituted at the time an authority to practise medicine under the laws of this State then in force, shall be guilty of a misdemeanour, and on conviction thereof shall be punished by a fine of not more than two hundred



and fifty dollars, or imprisonment for six months for the first offense, and on conviction of any subsequent offense, by a fine of not more than five hundred dollars or imprisonment for not less than one year, or by both fine and imprisonment. Any person who shall practise medicine under a false or assumed name, or who shall falsely personate another practitioner of a like or different name, shall be guilty of a felony. When any prosecution under this article is made on the complaint of any incorporated medical society of the state, or any county medical society of such county entitled to representation in a state society, the fines when collected shall be paid to the society making the complaint, and any excess of the amount of fines so paid over the expense incurred by the said society in enforcing the medical laws of this state shall be paid at the end of the year to the county treasurer.

Section 145 of that article was amended by chapter 636 of the Laws of 1895, to read as follows:

Section 145. Admission to examination.—The regents shall admit to examination any candidate who pays a fee of twenty-five dollars and submits satisfactory evidence, verified by oath, if required, that he: (1) Is more than twenty-one years of age; (2) is of good moral character; (3) has the general education required in all cases after August 1, 1895, preliminary to receiving the degree of bachelor or doctor of medicine in this state; (4) has studied medicine not less than three full years, including three satisfactory courses in three different academic years in a medical school registered as maintaining at the time a satisfactory standard; (5) has either received the degree of bachelor or doctor of medicine from some registered medical school, or a diploma or license conferring full right to practise medicine in some foreign country. The degree of bachelor or doctor of medicine shall not be conferred in this state before the candidate has filed, with the institution conferring it, the certificate of the regents, that three years before the date of the degree he has either graduated from a registered college, or satisfactorily completed a full course in a registered academy or high school; or had a preliminary education considered and accepted by the regents as fully equivalent; or had passed regents' examinations representing, for degrees conferred in 1881, one year of academic work; for degrees conferred in 1889, two years of academic work, and for degrees conferred in 1900, a full high school course. Students who had matriculated in a New York medical school before June 5, 1890, shall be exempt from this preliminary

education requirement, provided the degree be conferred before August 1, 1895. The regents may, in their discretion, accept as the equivalent, for any part of the third and fourth requirement, evidence of five or more years' reputable practice, provided that such substitution be specified in the license.

This act shall take effect immediately.

Section 836, of the Code of Civil Procedure, was amended in 1895 so as to read as follows :

Section 836. The last three sections apply to any examination of a person as a witness unless the provisions thereof are expressly waived upon the trial or examination by the person confessing, the patient or the client. But a physician or surgeon may, upon a trial or examination, disclose any information as to the mental or physical condition of a patient who is deceased, which he acquired in attending such patients professionally, except confidential communications and such facts as would tend to disgrace the memory of the patient, when the provisions of section 834 have been expressly waived on such trial or examination by the personal representatives of the deceased patient, or if the validity of the last will and testament of such deceased patient is in question, by the executor or executors named in said will, or the surviving husband, widow, or any heir at law, or any of the next of kin, of such deceased, or any other party in interest. But nothing herein contained shall be construed to disqualify an attorney in the probate of a will heretofore executed or offered for probate, or hereafter to be executed or offered for probate from becoming a witness, as to its preparation and execution in case such attorney is one of the subscribing witnesses thereto. In an action for the recovery of damages for a personal injury, the testimony of a physician or surgeon attached to any hospital, dispensary, or other charitable institution, as to information which he acquired in attending a patient in a professional capacity, at such hospital, dispensary, or other charitable institution shall be taken before a referee appointed by a judge of the court in which such action is pending; provided, however, that any judge of such court at any time in his discretion, may, notwithstanding such deposition, order that a subpoena issue for the attendance and examination of such physician or surgeon upon the trial of the action. In such case, a copy of the order shall be served, together with the subpoena. Sections 872, 873, 874, 875, 876, 879, 880, 884, and

886 of this code apply to the examination of a physician or surgeon as prescribed in this section.

Section 873, of the Code, was amended by chapter 429 of the Laws of 1894 so as to read as follows :

The judge to whom such an affidavit is presented must grant an order for the examination, if an action is pending; if no action is pending, he must grant if there be reasonable ground to believe that an action will be brought, as stated in the affidavit, and that the application is made in good faith to preserve the expected testimony; otherwise he must dismiss the application. Where the person to be examined is a party to a pending action, or is expected to be a party to an action to be brought, the order may, in the discretion of the judge, designate and limit the particular matters as to which he shall be examined. In every action to recover damages for personal injuries, the court or judge, in granting an order for the examination of the plaintiff before trial, may, if the defendant apply therefor, direct that the plaintiff submit to a physical examination, by one or more physicians or surgeons, to be designated by the court or judge, and such examination shall be had and made under such restrictions and directions as to the court or judge shall seem proper. In any action brought to recover damages for personal injuries, where the defendant shall present to the court, or judge, satisfactory evidence that he is ignorant of the nature and extent of the injuries complained of, the court or judge shall order that such physical examination be made; and if the party to be examined shall be a female, she shall be entitled to have such examination before physicians or surgeons of her own sex. The order must require the party or persons to be examined, to appear before the judge, or before a referee named in the order, for the purpose of taking the examination, at a time and place therein specified. The order must also direct the time of service of a copy thereof; which must be made within the state, not more than twenty, nor less than five, days, before the time fixed for the examination, unless special circumstances, making a different time of service necessary, are shown in the affidavit, and that fact is recited in the order.

#### COMPENSATION.

A physician's right to compensation depends upon contract, express or implied. The services of a physician being valuable, the law will imply a contract to pay a reasonable con-

sideration therefor by any one receiving the benefit of such services. This implied contract is, in the first instance, usually with the patient, or where one stands in such a relation with the patient as to being liable for necessities furnished him, as the relation of parent and child, husband and wife, guardian and ward, the implied promise is by such person. But a promise of a third person to pay for medical services rendered another may be inferred as in any other case where the circumstances are strong enough. Thus, where a person called at the office of a physician and left his business card, having written on it, "Call on Mrs. D——, No. —, ——— street," with the clerk, requesting him to tell the physician to call at once, it was held that he became liable to pay for the physician's attendance upon Mrs. D.

The express contract to pay for the physician's services, as well as the implied contract, may be made with a patient or with a third party. Where the contract is not express, a physician is entitled to recover a reasonable compensation for his services. As bearing upon the value of his services, he may show that his professional standing is high.

When a physician is employed to attend upon a sick person, his employment continues while the sickness lasts, and the relation of physician and patient continues, unless it is put an end to by the assent of the parties, or is revoked by the express dismissal of the physician, and the physician is entitled to recover for attendance during such time.

Under the foregoing statement of the law, it is apparent that the stranger receiving medical assistance is personally liable upon an implied contract to pay a reasonable compensation for it, and that third persons may become liable upon an express or implied contract to pay for the services so rendered to the stranger. The city or county would not be liable in the absence of some statute expressly making them so.

Chapter 270 of the Laws of 1885 provides for the appointment of a physician as health officer of the various cities and villages of the state, except the cities of New York, Brooklyn, and Buffalo, and authorises the boards of health to pre-



scribe the powers and duties of the local health officer, and to direct him from time to time in the performance of his duties, and to fix the compensation he shall receive; in that manner providing for medical attendance at public expense for those unable to pay for the same.

Under the consolidation act, sections 297-298, chapter 410 of the Laws of 1882, provision is made for medical attendance at public expense in the city of New York.

#### PRIVILEGED COMMUNICATIONS.

The term "privileged communications" is used by lawyers to denote those confidential statements which are made by clients to their attorneys; by patients to their physicians; and by churchmen to their priests. An important change in the law of "privileged communications" was made at the last session of the legislature and took effect on September 1 of the present year. The secrets of the attorney's office were protected by the common law of England; but not so the secrets of the sick-room and the confessional. In New York, however, statutes were long ago enacted which extended to physicians and clergymen of all denominations the same privilege of refusing to disclose professional communications as was enjoyed under the common law by attorneys, and now the statutory provisions in regard to privileged communications to members of all three professions are grouped together in the Code of Civil Procedure.

Section 835 of the code relates to lawyers and reads thus:

An attorney and counsellor-at-law shall not be allowed to disclose a communication made by his client to him, or his advice given thereon, in the course of his professional employment.

The amendment, which went into effect at the beginning of September, will make it read thus:

An attorney or counsellor-at-law shall not be allowed to disclose a communication made by his client to him, or his advice given thereon, in the course of his professional employment: nor shall any clerk, stenographer, or other person employed by such attor-

ney or counsellor be allowed to disclose any such communication or advice given thereon.

The change, it will be observed, consists in the addition of the clause concerning clerks, stenographers, and other employés of lawyers. Such persons are frequently present at interviews at which confidential statements are made to counsel, and often act as the messengers of the client to transmit such statements. In these cases, the privilege and duty of the lawyer to remain silent do very little good to the client if the lawyer's clerk or stenographer or office boy may be compelled to speak; and hence it has been deemed wise to extend the requirement of secrecy to the lawyer's servants, whatever their capacity.

A similar extension would also seem to be expedient so far as privileged communications to medical men are concerned. As the law now stands it prohibits any person "duly authorised to practise physic or surgery" from disclosing any information acquired by him in attending a patient in a professional capacity, and which was necessary to enable him to act in that capacity. This obviously applies only to regularly licensed physicians and surgeons, and not to trained nurses or hospital stewards and attendants. It seems to me that they should also be compelled to keep secret their knowledge of the ailments of those under their care.

#### THE RELATIONS OF THE DRUGGIST AND PHYSICIAN.

It is the duty of a physician to see that no druggist's apprentice shall be permitted to prepare, and dispense his prescriptions, except in the presence, and under the supervision, of a licensed pharmacist. While the druggist and the physician are natural allies, when each attends to his own proper business in an honest manner, a departure from such honesty and regularity should be summarily and surely dealt with. When a druggist is found substituting, counter prescribing, selling your prescription formulas, or gossiping about or criticising the prescriptions you write, it is your right and duty to report him to your medical societies, and

cross him from your list of eligible tradesmen. The law has decided that a prescription belongs to the patient. The druggist, after compounding it, has a natural right to retain it as his voucher; but he has no right to repeat it without your consent. It will be a benefit to all concerned if it be fully understood that none of the prescriptions written by you shall be duplicated without your knowledge. The unauthorised renewal of prescriptions has often produced the alcoholic, cocaine, and other drug habits. Also, frequently another person may have the prescription filled for ailments which they believe are similar to those you have prescribed for. I have known of the husband having a prescription for emmenagogue pills given his wife, filled several times for his own condition of torpid liver.

#### THE FEE QUESTION.

A general practitioner of medicine works twice as hard for his one-fourth fee as does the specialist for his full fee, and is very apt to lose his fee entirely, when the specialist is paid cash, as a rule. This is probably the cause of so many of the recent graduates studying for some specialty. The average man takes a certain pride in being sick enough to have a specialist visit him; and the average woman takes more. I have often heard this kind of a woman say, "Why! we had Dr. —, the great specialist, in, and he charged so many dollars," when I had been assured by local practitioners they could not collect any fee at all from that particular family. In my own city of Jamestown, all the licensed medical men of all pathies have joined forces for the protection of each other from people of this sort, who pay out-of-town specialists and neglect the men who really do their work. We employ a collector, and have a printed list of the names of all who do not pay, which list is revised every six months. A collector having the accounts of all the doctors in a city has a distinct advantage. If a man disputes Dr. A's account, the collector immediately pulls out Drs. B's and C's statements and says, "Dr. A may have made a mistake, but it is

quite certain Dr. B or C could not have been so careless." We have found no reason to regret our course up to this date. The laity think when doctors meet in societies, state and local, they do so merely to raise their fees, or in some other manner to better their financial condition. Our local society has tried to realise their expectations in some measure.

### DISCUSSION.

DR. J. M. FARRINGTON, of Broome county, said that his experience in legal matters had come rather late. Up to a few years ago he had never been sued. He had then received a summons in the case brought by a person whom he had treated ten or fifteen years before. The amount of damages claimed in this case was twenty thousand dollars. At the time of treating the plaintiff, the latter was a minor. At the time this boy had received a fracture, he had stated to the family that it would be quite probable that the joint would not be useful, nevertheless the result had been excellent. When the boy reached his majority, he fell into the hands of one of these shyster lawyers, and hence the suit. On submitting the matter to an attorney, he was informed that if the young man had begun the suit in the first year of his majority, he had no claim. A search of the records showed that the plaintiff had brought the action six weeks after the prescribed time. An effort was then made by the plaintiff's lawyer to secure a compromise, but this was refused. Finally, the speaker had offered the lawyer twenty dollars, which was accepted, and the suit stopped.

DR. DIDAMA remarked that nothing had been said in the paper about a recent act of the legislature to compel one bringing a suit to give bonds for the cost of the trial.

DR. DOUGLAS AYRES inquired the nature of the complaint, and whether there had been much distortion.

DR. BEMUS said that the case was one of Colles fracture, and there had been very little distortion.

DR. AYRES said that he had always understood that an action for personal injury must be brought in three years.

DR. FERGUSON said that in the question of financial responsibility for professional services, there was a form of supposed implied contract, not alluded to in the paper; it was the promise to pay in the case of the patient not doing so. For instance, if the physician were asked by a person to see a patient, and was told that if the



patient did not pay the physician's bill, the party calling him would pay it, there was no implied contract. Dr. Ferguson said that at one time he had received a notice that he must return a certain sum of money said to have been received by him in his office for implied malpractice. He went to his attorney about the matter, who advised that a messenger be sent to the house with a note addressed to the person named in the notice. No such person was found there. It would have been better to have sent a registered letter through the post-office, and have the detective accompany the postman.

DR. BROOKS said that Dr. Bemus could not do a greater service to the Association than by putting his collection of legal quotations in such form as to be accessible to the medical profession at large.

## A PLEA FOR THE GENERAL USE OF MEASURES TO PREVENT OPHTHALMIA NEONATORUM.

By ALVIN A. HUBBELL, M. D., of Erie County.

*October 14, 1896.*

The importance of a remedy is measured by the seriousness of the disease which it prevents or cures; and a preventive remedy is more valuable than a curative one in proportion to the amount of injury and fatality saved. If vaccination prevents individuals from having small-pox, or from having it in a severe or fatal form, while with all known remedies applied to the cure of the unmodified disease, a large proportion die, the importance of the prevention immeasurably outweighs that of the cure. If, by the adoption of efficient sanitary measures, Buffalo's death-rate is reduced one half and that city becomes perhaps the healthiest of its size of any in the world, the importance of the measures which prevent disease ranks high above the best remedies that can be used to cure it.

If the sad results of purulent conjunctivitis of infants can be averted by preventive treatment, in so much is the importance, here, of prophylaxis magnified over curative treatment.

I have set myself the task of showing that such is the case, and I invite the profession to reconsider the attitude which should be taken towards this subject.

In the first place, purulent conjunctivitis of infants, or ophthalmia neonatorum, is a most serious disease of the eyes. Statistics show that of those who have had the disease and have not been properly treated, from 10 to 15 per cent. become blind in both eyes; of those cases in which the treatment has been in part what it should be, from 4 to 8 per

cent.; and of those where the most skilful treatment is employed, from 1 to 4 per cent. As a large proportion having the disease are without doubt indifferently treated, it is probable that in every one hundred such cases at least five lose their vision in both eyes. A much larger proportion become blind in one eye.

In the second place, it is a frequent disease. Both old and recent statistics give ample proof of this. From them we learn that in institutions for the blind there are, according to Magnus, in Europe, 24 per cent. blind from this disease; in Switzerland, 26 per cent.; in Germany, 26 per cent.; in Hungary, 21 per cent. Reinhard estimates this class of inmates in the asylums of Germany, Austria, and Holland at 40 per cent., while Horner places it for Germany and Austria at 33 per cent., both estimates being much larger than those of Magnus.

In the asylums of cities, the following percentages have been found:

Copenhagen (Haussman)	. . . . .	8 per cent.
Vienna (Haussman)	. . . . .	20 "
Berlin (Haussman)	. . . . .	20 "
Berlin (Katz, at another time)	. . . . .	41 "
Paris (in 208 young persons blind)	. . . . .	45 "
Paris (Claisse)	. . . . .	46 "
Breslau (Magnus)	. . . . .	34 "
Sheffield (Snell)	. . . . .	38 "
New York, Batavia, Philadelphia, Chicago (Andrews, Howe, Harlan, Prince), about		20 "

In the eye hospitals and dispensaries, among those blind from this cause there were in

Nine German hospitals (Magnus)	. . . . .	10.8 per cent.
Breslau (Cohen)	. . . . .	11.1 "
Paris (Dumas)	. . . . .	69.3 "
Paris (Bourjot St. Hilaire)	. . . . .	27 "

Among the whole blind population of Brunswick, Fuchs has estimated that 28 per cent. were blind from this disease,

and of that of Nassau, 13 per cent. Bell (*British Med. Jour.*, March 3, 1888) claimed that there were 72 per cent. among those of England. The census of the United States gives a proportion of 20 per cent. (May).

Approaching this question as to frequency from another point of view, we find important testimony when considered in its relation to the whole number of births in a city or country. After a careful inquiry, Widmark (Rev. d'Ophthalmologie; and Sajous's Annual, 1889, section B, page 167) concluded that 3 out of every 1,000 children born in Sweden had ophthalmia neonatorum. Skrebitzky (*St. Petersburg Med. Woch.*, June 8, 1887) estimated that among the poor classes of St. Petersburg, 8 to 12 per cent. of the new born were afflicted with this disease. Calculating that for every one blind from this disease about fifteen to twenty others have had it and been subjected to the frightful risks of blindness, but have fortunately recovered, we may reasonably conclude that in the United States from 1 to 2 out of every 1,000 children have been victims of this disease. My own inquiry among physicians of Buffalo leads me to believe that in every 1,000 infants born in that city, at least 5 have this disease. In the practice of some physicians of my acquaintance the proportion is greater than this, while in others it is less. In European countries, the statistics show that the proportion is greater than in the United States.

We have another index of the frequency of ophthalmia, in the reports of the various clinics.

Mules (Manchester, England) reports a total of 97,237 eye cases attending the Manchester Eye Hospital from 1876 to 1884 inclusive, of which 3,319, or over 3 per cent., were ophthalmia neonatorum. Hirschberg reports in 21,440 cases, 314, or nearly 1.5 per cent.; Schoeler, in 10,000 cases, 156, or over 1.5 per cent.; Horner, in 10,000 cases, 161, or 1.6 per cent. In the eye hospitals of the United States, the proportion varies probably from 0.4 to 1 per cent.

The maternity hospitals furnish additional information, although it must be admitted that the frequency is much



greater here than in private practice. Without special prophylaxis, it has been found that from 1 to 5 per cent., and sometimes as high as 10 per cent., of the infants born in these institutions have ophthalmia.

These studies of statistics force us to conclude that ophthalmia neonatorum is not only a most severe disease and dangerous to sight, but that it is a common affection.

Its consequences are so grave, both to the individual and public economics, that its proper treatment has been emphasised in such a manner that it becomes by law a misdemeanour, punishable by severe penalty in this and several other states, for the nurse or midwife not to report the earliest symptoms to a physician. Thus great stress is laid upon its cure; and yet, under the most skilful treatment, even early begun, many eyes become blind. The lessening of its frequency is none the less desirable, and the importance of preventive measures is none the less apparent; but such measures have not until recently been developed, and made efficient and available. The time has, however, now arrived when the greater emphasis should be placed where it always belongs, viz., on the prevention rather than on the cure.

The prevention of ophthalmia neonatorum is not altogether a recent study. Recognising the fact that the disease is caused by infection from the secretions of the parturient canal, vaginal douches previous to, and during, labour have been recommended and practised by various physicians for many years. This practice is commendable, is measurably effectual, but it has never become common.

With the development of the germ theory of disease and the discovery of germicides came a new interest in this affection. The gonococcus of Neisser, of Breslau, described by him in 1879 (*Contrablatt für Med. Wiss.*, No. 28), became an objective entity and cause in gonorrhoea, and gonorrhoea was thought to be the prime source of ophthalmia neonatorum. Here, then, was something to be either eliminated or killed; and with one or both of these objects in view, a scientific prophylaxis has been attempted and put into practice.

Vaginal douches and cleansing the eyes were again resorted to with increased zeal, water, both with and without antiseptics, being used.

But it was not till 1883 that Credé, of Leipsic, after experimenting with different applications and substances, and solutions of different strengths, brought to the attention of the profession a specifically germicidal method of prophylaxis. He supported his claims for the method by an experience which has since been verified by all who have practised it with the same care. So potent has been this practice that, wherever it has been used properly, the occurrence of ophthalmia neonatorum has been reduced from the percentages prevailing in institutions such as I have already named, to 1 or 2 per cent., and in some institutions almost to zero. I refer to institutions, because it is here that the merits of the method can best be tested and comparisons best made.

Credé's method is as follows: The child is put into the bath immediately after ligating the umbilical cord, the eyes are carefully cleansed with a linen cloth, or better still, absorbent cotton; the eyelids are slightly separated, and a single drop of a 2 per cent. (10 grains to the ounce) solution of nitrate of silver is instilled between them. In order to make secure the instillation of *a single drop*, and to avoid the irritation which follows the application of a larger quantity, Credé recommended the use of a glass rod 15 centimeters (6 inches) long and 3 millimeters ( $\frac{1}{8}$  inch) in diameter, with smooth, rounded ends from which to let fall upon the cornea a single drop of the solution (Carl F. S. Credé, "*Die Verhütung der Augensündung der Neugeborenen*," *Archiv für Gynäkologie*, vol. xxi, 1883). He condemned drop bottles as a means of applying the silver, and did not evert the lids. He at first washed the eyes before the instillation with 2 to 200 solution of salicylic acid, and afterwards applied compresses over the eyes wet with the same. But this was soon discarded, as well as the vaginal douches during labour. He at last used nothing but plain water with which to wash the

eyes before the instillation. The efficiency of Credé's method is more explicitly shown by the following statistics:

In Credé's own institution, the percentage in 1880-'83 (including 1,160 births with only 1 or 2 cases) fell from 10.8 to 0.1 to 0.2. In 1886, he reported 1,211 births, with 3 slightly affected, or 0.25 per cent.

In the Greifswald gynaecological clinic, the cases of the disease were reduced from a per cent. varying from 9 to 22.4, to 1.8; in the Berlin Charité, from 9 to 0.9; in Koenigstein's, to 0.7; in Krunkenberg's, to 0.14; in Felsenreich's, from 4.3 to 1.5; in A. Russell Simpson's, from 11.76 to 5; in Bayer's, from 12.3 to 0 (Fuch's "On Blindness").

Giales (*N. O. Medical and Surgical Journal*, 1886) stated that in the Foundling Hospital of Paris, some twenty years ago, the percentage sometimes reached as high as 80 or 90; but to-day, under Credé's method, it was not far from zero.

Levan (*Sajous's Annual*, 1889, B, p. 66) used vaginal injections of 1 to 2,000 bichloride of mercury as a prophylaxis in 30 cases, and five of the infants became affected with mild ophthalmia. In 100 cases no injections were used, but Credé's method was followed, and not a single case of the disease occurred. In one other case, in which the silver solution instillation was inadvertently omitted in one eye, that eye became infected, while the one receiving the instillation escaped.

Steinbüchel (*Weiner Klin. Woch.*, Vienna, 1891) says that, during a period of two years preceding 1891, 5,994 children were born in Vienna hospitals, and the eyes became affected in only 1.75 per cent., while before the Credé method it was much higher.

Dr. J. Lwow-Kasan (*Deutsch Med. Zeit.*, 1889) reported in 1889, 914 infants treated by Credé's method without a single case of the disease.

Dr. May (*Medical Record*, 1895) says that in 4,000 births at the Sloane Maternity in New York, during six years, treated by Credé's method, no ophthalmia had occurred. At the Nursery and Child's Hospital, New York, there had

been 563 births during 1891-'94 with but one case. At the New York Maternity Hospital, Blackwell's Island, the disease was "very uncommon" among 300 births annually.

Dr. Garrigues (*American Journal Medical Sciences*, 1884, vol. 88, p. 444), during his service in the New York Maternity Hospital in 1882-'84, followed Credé's practice in 351 infants, and not one was affected with ophthalmia. One other case was delivered in the absence of the house-surgeon, and the silver was neglected, and this child had the disease and lost both eyes in spite of special treatment. In Dr. Mundé's service in 1885, in the same institution, 83 infants received Credé's treatment, and not one had ophthalmia. At a previous period, according to the house-surgeon, Dr. Pierson, "it had been no uncommon occurrence to have half a dozen of these cases on hand in a service of 35 confinements a month."

Without citing further experience, this seems sufficient to justify the method of Credé as a preventive to ophthalmia neonatorum. But other methods have been brought forward, and although not so extensively corroborated, make claims which merit consideration. For example, Dr. Pinard, of Paris, in 1888, introduced the practise of squeezing the juice from a citron and dropping it directly into the eyes of every child as soon as born, with encouraging results. At the Baudelocque clinic, 1891, out of 1,615 births there were 13 cases affected, or less than 1 per cent. (*Panas Maladies des Yeux*, T. II, p. 215). In 1890, he had used these instillations in 852 infants, of whom 14, or 1.64 per cent., had ophthalmia. Recently, Pinard has substituted for the citron juice a solution, 5 to 100, of citric acid.

Dr. E. Valude, of Paris, in 1891, brought forward iodoform insufflations into the eyes of the new-born, as a prophylactic (*Annales d'Oculistique*, T. 106, 1891, p. 96). His method is as follows:

Immediately after birth and before tying the cord, the lids are gently dried with cotton impregnated or not with an antiseptic solution, and all "greasy matter" is removed from



the lashes and edges of the lids, and then the lids are slightly separated and a certain quantity of finely powdered iodoform insufflated or dusted into the eyes. It is not necessary to repeat the insufflation.

He first began this practice in the Hospital Saint-Louis, in 1890, in the service of Dr. Bar. From December 1, 1890, to April 1, 1891, 264 infants' eyes were thus disinfected, of which 13, or nearly 5 per cent., had ophthalmia. Credé's method had been previously used in the same place and under the same conditions, with a result of 7 to 8 per cent. In Dr. Tarnier's service, the use of the iodoform insufflations gave the same comparative results. In 248 infants, there were 5 cases of the disease, or 2 per cent., while previously in 218 treated by Credé's method, 13, or nearly 6 per cent., became affected.

Madame Henry, midwife-in-chief of the Maternity, of Paris, washed the infants' eyes at birth and twice a day for a time afterwards, with 1 to 1,000 solution of bichloride of mercury, and in a long series of deliveries did not get a single case of the disease (*Valude, "Les Ophthalmies du Nouveau-ne,"* Paris, 1895, p. 29).

With carbolised water, Koenigstein, Olshausen, and others reduced the frequency of the disease to 1 to 4 per cent.

Others have had success with chlorine water, with solutions of formalin, of permanganate of potash, of beta-naphthol, of boracic acid, of biniodide of mercury, and of other substances.

Ordinary water alone has its advocates. Ludwig Korn, in the obstetrical clinic of Dresden, reports much success by conscientiously cleansing the infants' lids and their surroundings with water before opening the eyes. Simeon Snell (*London Lancet*, April 25, 1891) has adopted the same method in the Jessop Hospital, at Sheffield, England, and in 2,000 infants treated in this way, there has not been a case of ophthalmia.

Such experience as this—and much more of a similar character which could be cited—puts beyond question the effi-

ciency of the prophylactic treatment of ophthalmia neonatorum. Then if this is a frequent disease, if its results even under treatment are deplorable, and if preventive measures diminish its frequency from eight to ten fold, thus diminishing in the same proportion the suffering, misery, and loss of money both to the individual and state, by just so much is the importance of prophylaxis in this disease to be weighed and measured. If the disease could be diminished but one half, its value could not be over-estimated, and its practice could not be too stringently enforced.

But while it is true that we have these invaluable measures, yet the profession at large is, I fear, indifferent or uninformed, regarding them. The physician is not unmindful of the burdens and deprivations of blindness; then he ought to be alive to the need of averting it, and on the alert to use every means towards removing the causes that lead to it. Next to life, sight is the most precious thing on earth. Granting, then, that prophylaxis demands a full and general recognition, which method is preferable?

There is no doubt that contagium can be washed away either from the vagina of the mother or the eyes of the infant, if scrupulously and diligently done, and that even ordinary water will suffice. Were this process of cleansing the mother's vagina and the child's eyes so simple that it could be used under any circumstances, it might be chosen, but it is not. Vaginal injections require intelligent supervision and at least a few special appliances and conveniences in order to be well done, and they are not always at hand. A certain amount of trouble also attaches to their use and their necessary repetition, and even those competent to administer them are disposed to be indifferent and to omit them entirely, or, at best, resort to them slightly. The thorough and proper washing of the infant's eyes is also attended with an amount of concern that requires an intelligence not always present. Hence, vaginal injections or washing the infant's eyes have drawbacks that render them inapplicable as a general and trustworthy prophylactic.

The contagium producing ophthalmia can also be destroyed by certain substances, even without preliminary vaginal douches or searching washings of the eyes, and their application is easy and simple. Those substances which require large dilution, like carbolic acid, boric acid, salicylic acid, permanganate of potash, bichloride of mercury, formalin, and others, lose much of their power in such dilution and must be looked upon in this form more as washes than germicides, and they, too, require to be properly prepared and carefully and intelligently administered to be effectual. They have, then, requirements that are liable not to be met, and they can not be uniformly serviceable in all hands. Hence, germicides in other forms must be sought, the application of which is more simple and easy. It has been shown that iodoform justifies, at least measurably, the claims that have been made for it, and the method of using it, which is followed by Valude, and which has already been described, can be practised by anybody. Should the results so far published be verified in the future, it has this to commend it,—that by its odour and appearance it cannot readily be mistaken for another drug; it is easily obtained, and its use causes no marked irritation of the infant's eyes, or injury to those handling it. The most objectionable feature it possesses is its offensive odour, and this is of no consequence in comparison with the benefits expected from its use.

Weeks and others have demonstrated that nitrate of silver is one of the most powerful germicides known. Unfortunately, its staining qualities render it inapplicable for general surgical use. But within a limited range it has a usefulness that cannot be equaled by any other known substance. As a germicide in the eye its power has been repeatedly demonstrated, and not the least in ophthalmia neonatorum, both as a preventive and curative remedy. The experience that I have already cited indubitably proves that by Credé's method it has much power, and that no special and painstaking washings preliminary to its use are strictly necessary. Having such power, then, and having

such simplicity of application to commend it, together with the marvelous results which have been obtained in support of it, why should not this substance and this method become universal? It is harmless to the infant's eyes, the irritation which it excites being but mild and temporary, and the inexperienced, as well as the nurse, the midwife, or the physician, can do so simple a thing as is required in its application.

As to when prophylactic measures should be used, there may be difference of opinion. All will agree, however, that they should be used in cases where the mother is known or suspected to have gonorrhoea. But the disease often occurs where there is not the slightest history of maternal gonorrhoea, where by reason of symptoms or position in society there is no ground for suspicion of its presence. Indeed, there is abundant evidence that cases now and then arise without gonorrhoea. Neither is the disease limited, by any means, to those in the lower walks of life, as every practitioner of experience knows.

How, then, and by whom are the suspicious cases to be distinguished from the unsuspecting, the infective from the non-infective? Even if it were true that the cause is always gonorrhoea, only a bacteriological examination of the vaginal secretions for the gonococcus would determine its presence and distinguish a gonorrhoeal from a non-contagious vaginitis, and such examination would generally be impracticable, and if practicable, would be useless because of the loss of time required in making it. The history of a case, and the presence of symptoms of gonorrhoea, certainly render it suspicious, but these are often suppressed or masked, or cannot be elicited, even by shrewd and inquiring attendants.

It being impracticable, then, to at once and always recognise or determine the presence of the causative principle of the disease; it being true that even the most wide-awake and skilful practitioner, and surely the average midwife, cannot tell when or in what station of life the disease may occur, it seems to be conclusive that there is but one course to pursue, and that is to apply some prophylactic treatment to the



eyes of every living infant as soon as practicable after birth. The sequences of ophthalmia neonatorum are too serious, its occurrence is too frequent, and the prophylaxis, particularly Credé's method, so certain, that it is absolutely wrong to neglect it.

Furthermore, if legal obligations placed upon the early recognition and treatment of the disease are found to be necessary, how much more important is it that legislation should make compulsory and general a prophylaxis which insures to public and private good many times the benefits derived from the most skilful and potent treatment known of the disease after it has developed.

## PUERPERAL ECLAMPSIA STUDIED WITH REFERENCE TO PATHOGENESIS AND THERAPEUTICS.

By GEORGE TUCKER HARRISON, M. D., of New York County.

*Read by title October 14, 1896.*

Puerperal eclampsia presents a group of symptoms of surpassing importance to the general practitioner, as well as to the obstetrician, not only on account of the imminent danger which threatens the mother and child, but also because the disease has recently been the subject of careful scientific investigations designed to throw additional light on its aetiology, heretofore a *terra incognita*. The interest of the obstetrician is further enhanced by the reflection that no complication of the pregnant, parturient, or puerperal state puts him more on his mettle and tests his resources to a greater degree. The sudden and unexpected onset of the dread symptoms, which come like a clap of thunder in a clear sky, have been often commented upon. This sudden appearance would not so often take us by surprise if pregnant women were kept under observation, in conformity with the demands of modern scientific medicine. The important prodromic symptoms are anuria; albuminuria; oedema of the lower extremities, of the genitals, skin of the trunk, of the face, and of the upper extremities; especially noticeable are the swollen eyelids.

Ahlfeld has observed as precursors, slight convulsive contractions of the muscles of the face, slight opisthotonos, associated with weakness of the memory. The subjective symptoms are intense headache, dizziness, vomiting, amblyopia, and occasionally amaurosis. A strictly rational therapeutical plan of procedure could only be carried

into effect after a proper comprehension of the aetiological factors potent in the production of the morbid phenomena. It is not to be denied that at the present moment many problems in aetiology have not been solved, but, notwithstanding, we are pressing toward this consummation.

In 1843, Lever announced to the scientific world the important fact that in cases of eclampsia, albumen was almost always found in the urine. After this had been confirmed by universal testimony, it was natural that observers should draw the inference that eclampsia stands in a causal connection with diseases of the kidney. This view appeared the more logical when it was further observed that a diminution in the quantity of the urine, or even suppression of that excretion, almost always preceded the attack of convulsions, and consequently it would seem that the renal disorder was the cause, and not the consequence, of the convulsions. Recent studies, however, have conclusively shown that the pathological condition of the kidneys is often insignificant, and there is no correspondence between the gravity of the convulsions and the kidney affection.

The great pathologist, Virchow,<sup>1</sup> lately declared that the changes in the kidneys of women affected with puerperal eclampsia are much too insignificant to afford a basis on which to found a theory of the origin of eclampsia.

Prutz,<sup>2</sup> as the result of his studies upon the relation of the kidneys to puerperal eclampsia, attained to the conviction that quite a large part of the cases could not be explained by the renal changes that were found. On the other hand, when the kidneys are the seat of grave pathological changes, as in chronic parenchymatous and interstitial nephritis, eclampsia does not occur. The trend of modern thought is to regard puerperal eclampsia as a toxæmia, but not in the narrow sense of a mere uræmia. Clinical study and experimental investigation tend to confirm this view.

Rivière, from his studies, regarded eclampsia as an affec-

<sup>1</sup> Berlin. Klin. Wochenschrift. 1892. No. 7.

<sup>2</sup> Zeitschr. f. Geb. u. Gyn. Bd. XXIII, Hft I.

tion not identical with *uraemia*, but nearly allied to it. The distinction consists in this, that in *uraemia* an insufficiency of the kidneys only is involved; in *puerperal eclampsia*, on the contrary, a similar condition exists in the liver, the intestines, the lungs, and the skin, all of which he regards as organs for the excretion or annihilation of toxic substances originating in the organism or introduced into it from without. He finds support in his views from the extensive researches of Bouchard.<sup>1</sup>

Chambrelent<sup>2</sup> subjected the blood serum of eclamptic patients to accurate investigation, with the view of determining its toxic qualities. He found that it took one third the quantity of blood serum of an eclamptic to produce death in a rabbit by injection that was required to produce the same result if the blood serum was taken from a healthy man. The toxicity of the blood serum forms, according to Chambrelent, an important criterion for an opinion as to the gravity of a case of eclampsia. It is more decisive for the prognosis than the degree of the albuminuria and the number of the convulsive attacks.

With reference to the question as to the cause of death of the child in eclampsia of the mother, he investigated the blood serum of the new-born with the view of ascertaining its toxic qualities,—taking it from the umbilical cord—and found, though not constantly, that they were considerably increased. In this way is explained, according to this observer, the frequent death of children, even after birth.

Recently investigations in this domain have been made by Ludwig and Savor at Chrobak's clinique, with the following result: The urine of pregnant women is less poisonous than that of unimpregnated; their blood serum, on the contrary, more poisonous. The pregnant organism is, therefore, overladen with final products of metabolism. The serum of eclamptic is more poisonous than that of normal parturient women; the toxic condition increases in the stage of con-

<sup>1</sup> Leçons sur les auto-intoxications dans les maladies. Paris. 1886.

<sup>2</sup> Archiv. clin. de Bordeaux, Vol. III, and Jahresbericht über Fortschritte, Geb. u. Gyn. 1895.



vulsions. The urine of the eclamptic, on the contrary, is always, at the time of the increased toxic condition of the blood serum, less poisonous than normal urine.

What are these toxic substances? Ludwig and Savor assume that carbonic acid, a preliminary stage of urea, accumulates during pregnancy in consequence of the disturbance of the metabolism, and calls forth a toxaemic condition of the organism. If the body is overcharged with this virus, eclampsia is produced, with functional disturbance of the liver and kidneys.

According to Massen,<sup>1</sup> these toxic substances are non-oxidised products of the vital activity of the cells,—so-called leucomaines. These leucomaines are formed in the body of pregnant women in large quantity, but, through the intervention of the functional activity of the liver, are rendered innocuous. Under certain conditions, provisionally unknown to us,—likely due to an increase of the toxic substances,—changes take place in the liver as a result of the toxaemia, involving *secondarily*, in all probability, the kidneys; in consequence of which the liver is unable to render the leucomaines, circulating in the blood, innocuous; while, on the other hand, the kidneys are impaired in their excretory power. These toxic matters accumulate, therefore, to an inordinate degree in the blood and generate such an irritability of the central nervous system that, under the influence of external irritants, convulsions are evoked.

It should not escape mention that infection by micro-organisms has been invoked to explain the phenomena. Gerdes<sup>2</sup> believed that he had found these microörganisms in different organs, especially in the placenta in two very severe cases of eclampsia.

F. Hofmeister,<sup>3</sup> however, demonstrated that the eclampsia bacillus found by Gerdes was merely the *Proteus vulgaris* *Hauseri*. Up to the present time, no proof has been offered that it is an affection due to microörganisms.

<sup>1</sup> Centraltblatt für Gynaekologie. 1895. S. 1106.

<sup>2</sup> C. f. G. 1892. No. 20.

<sup>3</sup> Deutsche Med. W. 1392. No. 26.

Soft,<sup>1</sup> whose contribution to this theme is very valuable, has attained to the conviction that the renal change is not, in all cases, *primary*, but that it is called forth *secondarily*, in most instances, by the virus forming in the body during gravidity. If the kidneys are altered and disturbed in their function so that they are incapable of excreting the toxic matters, there ensues necessarily a considerable accumulation of toxic matters, and this calls forth again, on its side, a worse lesion of the kidneys. At all events, the lesion of the kidneys and the other organs—the liver and the intestinal tract—is in most cases secondary. If, in consequence of obstructed excretion, the organism is surcharged with the poison, eclampsia is developed. His researches force upon him the belief that the albuminuria and the eclampsia stand in intimate, although not causal, connection, and that the only correct way to solve the enigma of eclampsia is to endeavour by investigations, conducted during pregnancy, to acquire accurate knowledge with reference to the character of the virus. A very important question concerns the part of the organism of the pregnant woman in which the toxic metabolic products are generated.

Notwithstanding the interesting facts brought forward by Stumpf and Schmorl, which would seem to point to the placenta and foetus as the source of the toxic matters, a certain demonstration is yet wanting.

Provisionally we may coincide with the opinion expressed by Ahlfeld, and regard the placenta as the place from which the poison attains to the maternal circulation. It is possible, as he believes, that the virus is an alkaloid which originates as a metabolic product from the foetal circulation, or forms in the sinus of the placenta.

With reference to treatment, too much emphasis cannot be laid upon the importance of *prophylaxis*. If the prodromic symptoms are plain, and especially if the phenomena indicate a disturbance in the renal functions, the hot pack should be used and the patient put upon a milk diet, at the

<sup>1</sup> Archiv. f. Gyn. Bd. II, p. 246.

same time not neglecting to see that the bowels are performing their proper functions. Should the symptoms persist or grow worse, the question must be considered as to the propriety of evacuating the contents of the uterus. Especially in the earlier months of pregnancy, if symptoms are present which indicate renal disease, interruption of the pregnancy is, I believe, imperatively demanded, unless the morbid phenomena yield promptly to general treatment. In these circumstances, if the pregnancy is allowed to continue, the life of the mother is jeopardised by the attack of eclampsia, or by serous transudation; or, on the other hand, such changes take place in the kidneys that, after birth, they do not return to their normal condition, and there may be a transition into chronic nephritis. This latter probability has been denied, it is true, so far as the kidney of pregnancy is concerned, but in practice it may be difficult when we have a case before us of pure pregnancy kidney, or when actual nephritis is present. At all events, it cannot be denied that the dangers for the mother, and the prospects of delivering a living, healthy child, are less and less the earlier in pregnancy the renal disturbance manifests itself.

When the eclampsia has broken out, the indications are, *first*, to lower the excitability of the brain by narcotics; *secondly*, to cut off the effects of the centripetal irritants starting from the sexual organs, by as speedy an ending of the birth as possible consistent with safety to the maternal organism; *thirdly*, to counteract the effect of the toxæmia by restoring the function of the kidneys as quickly as possible, and by producing elimination through other channels.

Another indication, according to Barnes and many other authorities, is to lower vascular tension. It is to meet this indication that Norwood's tincture of veratrum viride is so enthusiastically recommended, as a rule. I believe, however, its good effects are due to its power in calling forth profuse diaphoresis and diuresis. Be that as it may, the potency evinced by veratrum viride in controlling the convulsions is remarkable, as attested by the experience of many obstetri-

cians in this country. The paper relating to this subject, read by Dr. Thaddeus Reamy before the American Gynaecological Society at its meeting in 1895, is very instructive, and is well worthy of perusal, especially on account of the number of illustrative cases given.

To meet the first indication, hypodermic injections of morphia must be exhibited. Their effects should be carefully watched. I have seen the life of a patient placed in the greatest peril by an overdose of morphia in these circumstances. Hydrate of chloral has been highly recommended, and I have used it repeatedly. Its exhibition demands great caution, especially if the heart is at all weak. Chloroform should not be used for any great length of time. Kalbubach called attention to the fact that its prolonged use is dangerous, as it readily leads to fatty degeneration of the heart and other organs; and, on the other hand, impairs the activity of the kidneys. Blood-letting I do not employ. Its much-lauded good effects may be obtained by other means not so detrimental.

When oedema of the lungs threatens in a strong woman, perhaps a copious venesection is permissible. To meet the second indication, we are all agreed that if the birth can be ended, without risk to the mother, by forceps, version, or craniotomy, if the foetus is dead, this should be done while the patient is under an anaesthetic. This presupposes that the os is already dilated or readily dilatable. On the contrary, if the os is not yet sufficiently dilated, or if the cervix maintains its form and is unyielding, the question is still a mooted one as to the indication.

On the one hand, there are those who insist that we should wait patiently until sufficient dilatation has taken place before actual intervention, keeping the patient meanwhile under the influence of narcotics. On the other hand stand Dührssen and his followers, who, in cases in which the cervix is dilated above, but the os undilated, make deep incisions in the os, the vagina, and the perinaeum, and then deliver by operative intervention; when the cervix still main-



tains its form, introducing a colpeurynter into the uterus and effecting dilatation by continuous traction. In using the colpeurynter, dilatation may not be sufficiently attained, and deep incisions may be necessary in addition.

In a high degree of rigidity, Schauta,<sup>1</sup> who is an advocate of Dührssen's method, admits that the incisions are of doubtful value, as by them alone, without simultaneous distention, the dilatation does not attain that degree which is necessary in order to be able to deliver without danger. In such cases, he believes the Caesarian section may be indicated.

Halbertsma has reported a number of successful cases. A few years ago, von Herff of Halle, in a case in which he had to deal with a long and rigid cervix, performed the Caesarian section successfully, saving both mother and child.

A very important circumstance to bear in mind is that in adopting the accouchement force, the patient should be profoundly anaesthetised. The future must determine the exact value of this method. It may be said to be still on trial. To fulfil the third indication, profuse diaphoresis should be excited by the hot pack, as in this way toxic matters are eliminated. In convalescence, the patient should be carefully watched, diuresis and diaphoresis promoted, and a milk diet enjoined. The psychoses which occasionally follow, it need scarce be said, demand our serious attention.

#### DISCUSSION.

DR. WILLIAM T. LUSK, of New York county, said he understood that a paper had been written recently by a physician in this city, in which it was stated that by careful and systematic examination of the urine, and by appropriate treatment, every case of puerperal eclampsia could be avoided. He had also heard that the quantity of urea was of no importance, but that if it fell below a certain percentage, premature labour should be induced. He recalled a case in which a patient had had convulsions in a previous pregnancy. She had a very slight trace of albumen in the urine. It was thought necessary, from past experience, to bring on labour at four and a half months. This was done by rapid digital dilata-

<sup>1</sup> Lehrbuch der Gesammten Gynaekologie.

tion. The foetus and secundines were all removed, and the uterus packed with gauze. At this time he had been called in to see her because of a most profuse haemorrhage, which had nearly cost her her life. He thought it was the experience of most of those present that where the only symptom was a slight trace of albumen, it was just as well to cling to the old-fashioned method, and leave the woman alone. The chances were one hundred to one that the case would do well if she were let alone.

He had seen another case in consultation, in which there was a slight trace of albumen. He was told that the urea was *only* 2.5 per cent.! He had been taught, however, that this was a good normal average, and for a woman who was passing, as this one was, a large quantity of urine, it seemed to him rather a high average. Nevertheless, he was told that abortion must be produced, otherwise she would suffer from uraemic intoxication. He could not agree to this, so the woman went on to term, and the baby was born without trouble and without symptoms.

In still another case, there had been .75 to 1.5 per cent. of urea. This woman was now within three weeks of the end of her pregnancy. The case had given him considerable anxiety, and the urine had been examined from time to time with the utmost care. She had passed 150 to 250 grains of urea in a day. The reason he had abstained from interfering was that there had not been a single symptom. There had been a little pus in the bladder, but there had been no oedema, no headache, and no disturbance of vision, and she was in as good health as most pregnant women. He thought there was an excellent prospect of her going on to full term, and being delivered of a healthy, living child.

He would like to have heard some of these questions discussed. Every two or three years it was instructive to review certain points. One often said to oneself, if there were a little albumen in the urine there would be probably an accumulation of urea in the blood and so produce eclampsia, and hence it would be prudent to bring on labour. But it should be remembered that many cases of albuminuria did not have eclampsia, and that there were many cases of eclampsia which presented no abnormalities in the urine. Then again, urea itself was not the poison that produced the eclampsia; it could be injected in large quantities into the system, and although it might produce disturbance of health, it did not cause convulsions. There was, however, the coincidence in a large number of cases of disturbance of the kidneys and convulsions. There are many other poisons which might result from

excessive tissue changes and their accumulation in the blood, which would probably produce convulsions. We knew that the leucomaines would do that, that acetic acid would do this, and the same might be said of carbamic acid. These poisons were produced in greater quantity in pregnant women, and the condition of elimination was such that very little would disturb the eliminative equilibrium and result in a paresis of the nerves governing the blood-vessels. In this way, it was not difficult to understand that changes might take place in the kidneys, liver, and various other organs of the body. An important point for us to bear in mind was that the diminished quantity of urea would indicate an excess of the other poisons which result from tissue changes. There were many of these poisons, and they defied chemical analysis. We should also bear in mind that there might be decomposition in the intestine, which, by producing toxins, might result in the production of eclampsia. Eclampsia might occur in individuals in whom there was an inherited tendency to convulsive seizures.

He was always interested to hear about the methods claimed to invariably prevent or to cure puerperal eclampsia, for he had certain cases in his practice in which the hind feet of a grave-yard rabbit only were of service. In certain cases there would be a marked rise of temperature, indicating a bad prognosis. In certain other cases, the circulation was much disturbed, but quickly returned to the normal. In a certain number of the fatal cases, thrombi were found in the vessels, and bits of tissue cells in the liver, blocking up the smaller vessels. We always find giant cells have been carried from the placenta and up into the brain, into the heart, or into the kidneys. These changes might all take place as a result of the convulsions, or of the toxins to which we attribute the convulsions. It was evident, therefore, that we were justified in considering these cases very grave.

He wished by these remarks to draw attention to the interest now exhibited in Europe regarding the treatment of cases in which there is a slight albuminuria, and perhaps slight nervous symptoms, by a milk diet. These patients were put on at least two quarts of milk a day, and great care was taken to keep the bowels regular. Tarnier, Charpentier, and many other distinguished foreigners, insisted that there were very few cases which would not do well under this treatment. They claimed that it caused a disappearance of the albumen and a cessation of these threatening tissue changes.

In cases in which the feet were swollen and there was headache

or pain in the pit of the stomach, associated with albuminuria, he would certainly be disposed to induce premature labour, but he did not desire to interfere in cases presenting no symptoms except albuminuria. His own preference was for the use of the Barnes dilators. He did not mean to say that forcible dilatation of the uterus with the hand, the performance of version, and the pulling of the child forcibly through the lower segment, was not a good method, but he preferred the other. The use of the Barnes dilator would bring on labour usually in from two to four hours, especially if the patient were a multipara. With the onset of labour pains, the placenta would be separated from the uterine walls, and at the time of the delivery of the child everything would come away clean, instead of being retained, thus giving rise to haemorrhage or sepsis. He believed that in this way he could accomplish his purpose quite as rapidly as safety would permit. If, however, the case were very urgent, he had no objection to making Dührssen's four incisions into the vaginal portion of the cervix. These incisions must only be employed after the upper segment had been fully dilated. There should be very little difficulty under these circumstances in extracting a child, but in many instances there would be very severe haemorrhage, and hence, if we could succeed in emptying the uterus within a shorter period by other methods, they should be given the preference.

In a case in which these incisions had been made, he would prefer, after the delivery of the child and placenta, to at once introduce sutures and sew up these four rents. Tamponing was a very poor method of preventing haemorrhage here. The only justification for such violence, of course, was that the uterus must be emptied as speedily as possible. Chloroform, of course, controls the convulsions, but its use could not be indefinitely employed on account of its tendency to produce fatty change in the heart. If a woman suffering from puerperal eclampsia had turgid blood-vessels, sixteen ounces of blood drawn from the arm would act more efficiently and satisfactorily than any remedy with which he was acquainted. The action of chloroform, it was well known, could be aided by morphia and chloral. Regarding veratrum viride, he would say that while he had had no personal experience with this remedy, it was a matter now attracting a great deal of attention. This was particularly the case at the meeting of the Geneva Gynaecological Society. Many foreigners who had recently tried it spoke of it in the highest terms, yet personally he was afraid of it. If there was some person here who could put his experience with this



drug on record, he was sure it would be welcome beyond the limits of this room.

DR. E. R. SQUIBB, of Kings county, said that lately some physiologists had given out the thought which he would like to bring to the attention of Dr. Lusk, viz.: that arterial tension alone causes a difference in the urine, in that it produces a variation in the chemical constituents of the blood,—in other words, where there was a high arterial tension, elements would appear in the urine which would not be present without that grade of arterial tension. He would like Dr. Lusk to consider this fact in connection with the employment of venesection in cases of puerperal eclampsia.

Europeans, the speaker said, did not know our *veratrum viride*; their drug was *veratrum album*. It contained only some of the elements found in our *veratrum viride*; hence it was not to be supposed that its therapeutic effect would be the same as in our own country. The results, therefore, obtained by foreigners could not be exactly compared with those obtained in this country. Dr. Fearn, of Brooklyn, was probably the man who had exploited *veratrum viride* most, and the impetus that he had given its use at that time had been to a certain extent kept up. For this reason, many physicians in Brooklyn had learned to use *veratrum viride* successfully. The harm done by Dr. Fearn was, in his opinion, due to his advocacy of such enormous doses of the drug. If he had employed smaller and more frequently-repeated doses, he would have avoided the nausea observed when *veratrum viride* is pushed. The effect of the drug is similar in some respects to that obtained by venesection.

His preceptor, the elder Meigs, said to his class on many occasions: "I never allow a parturient woman to complain of a headache or see double without bleeding her. If I ever do overlook it, I am sorry for it." He always insisted that his students should keep this important fact ever in mind. The officinal fluid extract of *veratrum* should be given in about five-minim doses, repeated every ten or fifteen minutes until some effect was seen on the pulse. If this effect were slight, then the dose should be diminished to about three minims, but not discontinued at once. Usually within the first half hour the pulse would be distinctly affected by *veratrum*. Some observer had called attention to the fact that the reduction in the volume and rapidity of the pulse was always accompanied by a reduction of the temperature. If this were true, it was certainly very strongly indicative of the action of this rem-

edy. He would not be understood as limiting the use of veratrum to the cases having high arterial tension. The feeble pulse of some cases is under the influence of the nervous system for the time being, and does not indicate that there has not been a high tension, or that it may not exist soon again. When the pulse is feeble, the indication is to use smaller doses. The presence of the physician in the room might, in some instances, be sufficient to cause a temporarily feeble pulse.

THE PRESIDENT said that some of the Fellows probably recalled the review of this subject at one of the first meetings of this Association, and also the meeting at which the action of veratrum viride had been discussed. He would emphasise the fact that the pulse is very deceptive. He had bled many persons suffering from convulsions, even though the pulse were feeble and rapid. When the pulse had become slower and steadier, he would resort to the veratrum viride. He had never given more than five minims at a dose, giving a second dose in half an hour, and a third dose about one hour later, if it were necessary. There would always be a warning—the pulse would become slower. The deceptive quality of the pulse should be borne in mind; it required venesection and veratrum.

DR. E. D. FERGUSON asked Dr. Squibb what would be the relationship between the officinal fluid extract and Norwood's tincture.

DR. SQUIBB replied that Norwood's tincture had always been supposed to be a saturated tincture, but it did not represent the drug in that strength. From what he recalled of the preparations of Norwood's tincture, he would say that it was about two thirds or three fourths of the officinal fluid extract. The pulse could be reduced to just the right extent if the veratrum viride were skillfully employed.

DR. EDEN V. DELPHY, of New York county, asked whether any of the Fellows had noticed any association between puerperal eclampsia and haemorrhage occurring shortly before labour, probably due to displacement of the placenta. He said that about three years ago he had been called to see the wife of a physician who had had such a haemorrhage, and subsequently developed puerperal eclampsia. Another case of the kind had come under his notice about one year later. Inquiry showed that she had had

a haemorrhage about one month before labour. If, as had been claimed, puerperal eclampsia were due to a bacterium, then this might give the opportunity for the entrance of the bacterium. Were the high arterial tension, the watery condition of the blood, and the quickened reflex activity the real causes of eclampsia, or were they the result of the entrance of the bacteria?

DR. FRENCH, of Amsterdam, said that Norwood's tincture was a saturated alcoholic tincture of the green root. When he began the practice of medicine, it was not available in the market, and he had been in the habit of gathering the roots himself and making the tincture. The roots were cleaned and soaked in enough alcohol to just cover them for eighteen days. This was the original Norwood's tincture. He had used it quite extensively in the convulsions of children also, and had kept up this practice with much satisfaction. He had seen a great many cases of eclampsia, and although he had carefully studied it, he had long ago come to the conclusion that he knew nothing about the condition or the treatment. He had freely bled his patients, and none of them had died, and, so far as he knew, this was the best treatment. It was, however, purely empirical. He should, nevertheless, continue to bleed and to prescribe veratrum.

DR. SQUIBB said that the defect in the original Norwood's formula was that the veratrum viride contains a variable quantity of water, and in drying would lose from fifty to seventy per cent. of water, depending upon the soil and the time of the year the root was gathered. This made the alcohol weaker in one case than in the other. This is the objection to that method of making the tincture. If the alcohol were too much weakened by the water of the root, or too strong, the resulting tincture would be objectionable. The official preparation was, therefore, more definite.

DR. FRENCH said that it had been his custom to mark the roots in the early fall and then dig them late in the season, or else early in the spring before the leaves started.

# NEURALGIA OF THE PERIPHERAL NERVES, WITH SPECIAL REFERENCE TO THAT DEPEND- ENT ON TRAUMA OR DEGENERATIVE CHANGES.

By THOMAS H. MANLEY, M. D., of New York County.

*October 15, 1896.*

At the very threshold of this study it becomes necessary that a comprehensive definition of neuralgia be given, in order to demonstrate that such a pathological entity occurs at all.

From the standpoint of pathology, it may be open to considerable doubt, as the ground-work of our views on this disease, which manifests itself through the nervous system, rests rather on clinical phenomena than on anatomical changes of the molecular or corpuscular elements in the cerebro-spinal axis.

It therefore follows that, as the histo-pathology of that condition recognised under the name of "neuralgia" is still involved in great obscurity, anything like a scientific classification of its various pathologic types as dependent on cellular changes is quite impossible. This difficulty was appreciated by me when the present contribution was undertaken.

My aim will be, then, rather to record clinical observations and curious phenomena than launch off at length into the domain of speculation or hypothesis.

## NERVE TRAUMATISMS.

It has always been an interesting question to me what share of disorganisation the nerves sustain in severe injuries of the limbs, head, or neck; in violent sprains, dislocations, or fractures; what the regenerative power of the nerves is



after traumatism, and what the remote influences on the nerves are which may, at an ultimate date, follow.

*Nerve Degeneration through Vascular Changes Dependent on Tension or Compression of the Nerve Trunks.*—A large nerve-trunk is not a highly vascularised structure, and hence atrophic changes in its substance follow rather as a consecutive condition, dependent on the vascular structures in the central ganglia or the peripheral terminals.

But are the nerves alone the exclusive media, the cerebro-spinal and sympathetic systems, of transmission of vitalising influences, of sensation, of motion, special sense, and all other vital phenomena, connecting the centres of life, the heart and the brain, with the extremities and the organs? Or do not the encephalic fluids, as the meningeal and the ventricular, or especially the blood, participate actively in the function of animal magnetism, in the afferent or efferent transmission of impulse or sensation?

In the course of my own researches on the blood and the haemic elements during the past two years, my attention was incidentally directed to this topic, and from what I then saw of the effects of impediment of the circulatory current in the living animal, and with what I have repeatedly demonstrated experimentally and witnessed clinically, I have no longer any doubt as to the active part which the blood plays, not indirectly only, on the nutritive forces, but directly, through plasma and the globular elements, on the fixed cells and the protoplasm. It is my belief that, *sui generis*, it is actively concerned in the phenomena of pain, either *alone* or in connection with the nerves.

#### GROSS ANATOMY OF THE NERVE TRUNKS.

A complete nerve, functionally considered, consists of a root or ganglion, or central source of origin, a shaft or conductor, and its terminal filaments or ramifications.

All of the cerebro-spinal nerves,—these being the only ones considered in this review,—as they pass out from their osseous cavity,—the cranio-rachidian,—which encases them, enter

and leave perforations in the base of the skull and jointed openings in the vertebral walls. Some pierce the bone and wend their way through long, canular passages, as the inferior maxillary, the chorda tympani, the chorda equina, and others.

The composition of a primitive nerve cord is of much greater density and strength than is usually supposed. The prevalent impression that a nerve is necessarily a delicate, fragile structure, is an erroneous one, without any foundation. All the larger, primitive, medullated nerve trunks are rich in a dense, reticulated, fibrous stroma, this consisting of a peculiar and unique type of connective tissue, of remarkable tensile strength and toughness, which at some of the most dependent articulations, in a considerable degree, serve the purpose of accessory ligaments.

In order to estimate the great strength of individual nerves, we may do so with a relative degree of accuracy by resorting to experimentation in the living or the dead body.

Neurectasis is a very ancient expedient for the relief of neuralgia; but Tillaux and Trombetta have employed mechanical nerve stretching for the purpose of determining the relative resistance of the different nerves. Their results varied somewhat,—*e. g.*, Tillaux, in a case of sciatica, found that 58 kilogrammes ruptured the sciatic nerve, while Trombetta was obliged to employ 84 kilogrammes to secure the same result. The wide discrepancy in their results may be accounted for by the difference in the methods employed. Tillaux made nearly all his experiments on the cadaver. He divided all the tissues, the bone included, except the nerve trunk, by a circular incision, and then applied tension. Trombetta's experiments were all made on the living subject. In one instance, he saw the cubital nerve elongate from 15 to 20 centimetres before it ruptured. It usually took from 20 to 30 kilogrammes weight to rupture this nerve trunk or the median.

Tabulating his experiments on this subject, he found that it required an average of 84 kilogrammes to rupture the sci-

atic (about 230 pounds; crural, 58 kilogrammes; median, 38.187; radial, 27; cubital, 26; brachial plexus, 17 to 37; popliteal nerve, 52; infra-orbital, 2.72; supra-orbital, 5.472; sub-mental, 2.492; fifth cervical, 22; sixth cervical, 24; seventh cervical, 23.411; eighth to first dorsal, 29.460 (Reclus and Duplay, "*Lecons Chirurgie*," vol. I, p. 76).

In Gillette's experiments on the sciatic nerve on the cadaver in 1875, he found that the force necessary to rupture this nerve varied in twelve subjects from 200 to 75 kilogrammes, or 600 to 75 pounds; twenty-nine times the force varied from 162 to 62 kilogrammes; three times he was unable to rupture it by any weight under 200 kilogrammes. In this country, Dr. Weir Mitchell has given this subject extensive study, his conclusions in the main agreeing with those of European investigators.

The nerve roots, as they start from the spinal cord or base of the brain, carry three tunics with them; but as they advance into the tissues and commence to decussate, all the envelopes become fused into one, and from this the main nerve trunk is divided and subdivided by septa into partitions and ultimate fibres.

*In Traumatisms.*—The tough, resisting character of these structures is what tends to impart to them their marvelous physical tolerance and enables them to survive the longest after the violent trauma of a limb, the nerve being the last to perish.

The experienced surgeon is well acquainted with this fact, and well knows that, however hopeful other signs may be, when total abeyance of all neural phenomena is evident, the crushed or mangled limb is irretrievably doomed and must be sacrificed.

*In Fracture.*—The too general custom of concentrating all one's attention on the osseous structures in the treatment of a fractured bone, quite regardless of the circulatory or nervous systems, has often been followed by unsatisfactory results—by interference with regenerative processes, paresis,

or permanent trophic changes, liable to impair the ultimate usefulness of the damaged limb.

At the articulations the main nerve trunks occupy a more or less fixed position, where they pass under the bone shafts between the bone heads, or through the interosseous ligaments, so that in the event of osseo-arthritic fracture, entasis, subluxation, or various types of complete dislocation, excessive nerve tension, laceration or complete rupture is not an infrequent complication.

The immediate effects after most simple fractures, especially when the large shafts are involved, are loss of motor power, diminution or complete loss of sensation, with marked circulatory disturbances.

In many of those cases of extensive shattering of bone, or so-called "bean-bag" fracture, attended with a grinding and pulpifying of the soft parts, it seems most extraordinary how the nerve trunks so often escape permanent damage; but that some of them have shared in the disorganising effects of the trauma no one can dispute.

Clinically and experimentally, it has been incontestibly demonstrated that the nerve structure presents not only remarkable physical resistance, but, when traumatised, divided, or destroyed over a localised area, it possesses the most marvelous regenerative properties, outrivalled in this respect by no other tissue in the human economy.

*Pain*, in a most accentuated degree and a peculiar quality, occurs at three different periods after fracture.

The *first* is *primary*, over the immediate seat of injury at time of fracture.

The *second* is *reactionary*, attendant upon the early stages of the regenerative processes, usually absent in non-complicated cases, properly treated, except on motion of the limb. When pain is very intense and protracted, it invariably serves as a warning signal that there has been a faulty adjustment of the dressings; there is malposition, vascular stasis impending, local sloughing, or gangrene of the limb.

The *third* is an *intermittent*, or a constant, pain, accom-



panied by a wasting of the soft parts and paretic symptoms, involving either the entire limb or only certain groups of muscles.

For years, in many who have sustained a severe fracture after adult age, a sensation of moderate or severe pain is felt at the seat of consolidation on making a severe muscular effort, or in certain seasons, during change of the weather.

Persistent pain, with evidence of trophic changes, occurs seldom after simple fracture in the healthy, except when a nerve trunk has been caught up in the callus, or is included between the ends of the fragments in the union of them.

The above enumeration has reference only to what may be regarded—if such a term may be permitted—as *physiological pain*, or a necessary phenomenon in repair, regeneration, or imperfect structural restoration.

Pain in pathological conditions, of a constitutional origin, associated with fractures, presents special characteristic phases not liable to be confounded with the traumatic type. Rheumatism, syphilis, tubercle, and paludal conditions in many fractures are potential agents in modifying nutritive processes, in aggravating and protracting hyperaesthesia. In many, the only means by which the actual cause or the depressing sufferings in fracture can be determined, independent of clinical observations, is by the *therapeutic test*.

#### ENTASIS, SPRAINS, OR DISLOCATIONS OF THE BONE SHAFTS.

Some of the gravest consequences to the functions of the limb, we will see, follow the twist or wrench of an articulation. The tibiotarsal, tarsometatarsal joints and the first metacarpophalangeal joint of the foot are most conspicuous in this respect.

The persistent, consecutive so-called “neuralgia pains” of all severe sprains sometimes protract convalescence long after all inflammatory symptoms have passed away.

Diffusive tendo-vaginitis, intermuscular, inflammatory deposit with adhesions after joint injuries with mono- or mul-

tiple-bursitis, are all attended with various degrees of pain, which is sometimes extremely obstinate in character.

The above constitute but a fractional part of the morbid anatomy succeeding severe joint injury. It goes without saying that in all there is more or less laceration of ligament, tendon, muscle, and synovial membrane.

Dislocations at the shoulder furnish us with an excellent illustration of what the nerve structures will generally tolerate with impunity in the way of sudden displacement with considerable tension, when the head of the humerus leaves its socket or is driven through the capsule. And in those not uncommon cases of shoulder dislocations, which offer great resistance to reduction, we have another instance of nerve tolerance to violent compression force and repeated contusion.

Neither severe pain nor any special neural phenomena are noticed after reduction, in any other than rare instances, even when the initial violence has been very great, or maladroitness practised in manipulation.

*Traumatic arthralgias* comprise a very large class of pathologic changes. The most chronic and rebellious to treatment are those resulting from contusions or wrenches in hysterical patients. In this group, more than any other, do we find the intimate association of psychical influence with nervous disturbances resulting from trauma. Ankylosis, limitation of the range of joint movement, hyperaesthesia, and enfeebled muscular action may long linger until, under some sudden emotion or violent impulse, with the infliction of acute pain or shock, the contracted muscles are liberated, local symptoms vanish, and function is restored. This class of cases, when no serious organic changes are present, is the one *par excellence* for "mental therapeutics," for the "natural bone-setter," the charlatan, or faith cure.

*Trauma of the cavities*, not attended with any apparent gross lesion of structure, may be followed by localised, painful affection, or even mortal symptoms. We rarely encounter them over any region of the cranium, oftener over the

thoracic walls about the precordia, and most frequently of all over the abdominal or pelvic areas.

The chest will sustain a great battering force with remarkable tolerance; thus, we may see a person knocked clear off his feet by a blow delivered upon its walls, with no evidence of serious constitutional disturbances succeeding, although non-penetrating stab wounds, lacerations, or punctures are prone to induce the most profound shock when inflicted over any area of the thorax.

A sudden, violent blow over the scobiculis cordis has been known to produce instantaneous death when no trace of organic lesion could be detected *post mortem*.

In the event of concentrated concussive force being sustained, no region of the body is so much exposed to danger as the abdomen. Its viscera are all pendulous and movable, with no powerful protecting barrier in its mid-areas, except from behind. In the female, in various physiological conditions, the results of trauma over the abdominal area may be serious.

In the male, severe, protracted pain, with a traumatic history of causation or not, rarely occurs without a tangible or definite pathologic organic basis. With the female, the contrary is decidedly the case. While conceding that mechanical delivery is responsible for certain pelvic traumas, which may lay the groundwork of disease within the pelvis, yet after comparatively trivial injuries women sometimes continually complain of a deep-seated, dragging pain in the side or back, without any evidence of pathological changes in the pelvic organs. In vain the family practitioner irrigates, cures, or cauterises, and the pain continues. The most intelligent and skilful physical examiner elicits nothing, and then, as a matter of routine, she may be laparotomised, when no tangible evidence of pathological change is found. Some slight improvement may follow, but the pain again and again recurs, until some advertising itinerant, some "Indian physician," a clairvoyant, or sectarian practitioner prescribes for

her a little of nothing. But she is strong in faith; all pain vanishes, and her health is restored.

The *rachidian* structures, because of their complexity of organisation and function, are exposed to a multiplicity of traumas. "Pain in the back,"—how exceeding common in the female,—a dull ache, a dragging, ceaseless pain, rendering life miserable and wretched. In the male it is known as lumbago, liable to be recurrent and sometimes rebellious to treatment. Has it often a traumatic origin? Not in my own experience of something more than one hundred and fifty cases of serious spinal injuries.

Severe pain in the back, of the most harrowing description, is generally borne in all grave lesions of the osseous architecture of the vertebral column, whether they involve the spinal marrow or not.

And we shall observe great suffering when only the extrinsic structures are involved. But in ordinary spinal contusions or sprains, not attended with disorganisation of structure, although the back may remain weak over varying periods of time, intense or protracted pain is not a constant or prominent feature.

Pain in the lumbar region, "the small of the back," is so frequently a symptom of structural, visceral, or constitutional disease that a most complete examination of a case should be made before it is decided that it is solely dependent on changes in the nerve elements.

*Neuralgia of the Periphery Dependent on Senile, Degenerative Change or Structural Alteration Concomitant with Advancing Age.*—The physiological anatomy of the body, from its earliest development to the end of a natural life, embraces *evolution* and *involution*.

The infant is born hairless and toothless, probably; if not completely, nearly sightless and deaf; able only to digest the liquid aliment of the mother, and chiefly, if not entirely, guided in its movements by instinct.

During the period of growth the shape, relations, the consistence and volume of the various structures and organs



undergo the most radical changes, until finally the stage of maturity or complete development is reached.

Now the onward course of structural changes in the human body varies greatly in individuals, depending on hereditary influence, environment, habits, climate, and occupation.

Under ordinary circumstances, for a period of twenty years—*i. e.*, from the twenty-fifth to the forty-fifth year—no very marked gross changes are noted in the anatomy of the body; but degenerative and senile processes are subservient to no unchangeable law, and therefore years are not always a criterion of age.

Thus, in one, the osseous framework of the face undergoes a distinct change of contour early; the angles of the lower jaw become prominent, the teeth and hair fall out, the skin atrophies and wrinkles, a general shrinkage of the body begins, while in others this change sets in much later.

If we would the better comprehend these retrogressive changes and the character of senile, pathological changes of the body, it may be well to note the order of them in the tissues.

The first to show signs of atrophic changes are the connective tissues; the subcutaneous fat becomes resorbed, the skin atrophies, interstitial changes involve the muscular system, resulting in fibrous or fatty changes. All of the epithelial organs and the mucous surfaces present signs of diminished activity or perversity of function.

Condensation or eburnation and shrinkage in the skeleton take place; whole areas of cancellous tissue are absorbed, and large osseous territories become entirely avascular.

The primary cause of all atrophic changes is undoubtedly in the vascular system, or whatever that mysterious, unknown influence is which keeps the heart in motion and the blood flowing.

We now have arrived at that stage where we must endeavour to determine what rôle the nervous system plays in these degenerative changes as a causative factor—what they are and what the ultimate essential mutations in the organs or tissues are in consequence of them.

It has long been noticed by more than one observer that mental energy often long survives after many of the organs have nearly ceased in function.

Surface sensation is rather augmented in the aged, for they are always early conscious of thermal changes, and motor impulse is readily transmitted, though the power to respond may be reduced or entirely lost, through abeyance of the reflexes.

From a survey of the subject of senile degenerative changes, it would appear probable that the cerebro-spinal system survives the longest, and that when its anatomical elements become the seat of pathologic changes, these are always consecutive to those in the vascular and other systems.

This brings me to the very brief consideration of some types of neuralgia, especially those of the head, that in a large measure, if not entirely, are dependent on anatomical changes in the bones and the osseo-arthritic structures.

The most frequent, pronounced, and grave form of agonising pain ever endured, independent of pathologic organic changes, is that which involves the trigeminus or the brachial plexus of nerves.

With the cranial nerve, but one of its divisions may be affected, or even a subdivision of one of its main trunks, in neuralgia; while in some cases attended with the most agonising pains, all the terminal ramifications are equally involved.

Some of the most distressing forms of suffering that ever came under my notice have been in individuals who were the subjects of violent spasmodic pain in the arm or forearm without a trace of coexisting pyrexia. Five of such cases have come under my observation—four males and one female. In all, the right arm was affected. In two, the attacks occurred with all the violence and suddenness of shock, quickly exhausting the patient, and inducing syncope and unconsciousness. In all there were premonitions of the attacks, which had some of the clinical features of Jackso-

nian epilepsy. In none was there any history of heredity, injury, syphilis, rheumatism, or malaria.

Now, what is the probable aetiological groundwork of these dreadful neuralgic seizures? In many cases the cause remains as great a mystery now as ever.

It will not do to evoke neuritis as an explanation, for the nerve trunks contain but little connective tissue, and are not highly vascular; besides, with some of our most distinguished pathologists it is a disputed question whether an inflammatory action *de novo* ever seizes on the medullary elements of a nerve trunk.

#### DEGENERATIVE CHANGES.

After a careful consideration of the subject, the conviction has been forced upon me that the essential morbid changes underlying many of the most intractable types of neuralgia depend on an involution process in the anatomical elements, the structures and investment of the main trunk.

As age advances, the interstitial connective tissues undergo resorption, while the relative proportion of dense fibrous structure in the nerve sheath is augmented. This with the perineurium and neuroglia increases, while the nerve cells and axis cylinders, though not diminished in number, are reduced in size, or undergo pathologic changes of various kinds. This process may set in prematurely or involve only limited groups of nerves, as in non-specific tabes dorsalis or non-rheumatic lumbago.

The most radical physical and anatomical changes of senility involve the osseous elements of the head and spinal column. The bone plates of the calvarium fuse together with the resorption of the diploic space. With the general hardening or eburnation of the entire cranial cavity, there is a simultaneous contraction of all of the openings and passages leading from the brain and spinal cord outward towards the periphery. Here we have another contributory factor of degeneration in the obliteration of the finer osseous perforations, with a narrowing of the diameters of the foramina and canals through which the nerve and blood trunks pass.

What rôle does this general shrinkage of the portals of escape of the nerves from the skull and spinal canal play as a possible factor, as a compressing or tension element, in interfering with the vascular supply or the necessary freedom of the nerve elements?

There can be scarcely a doubt but that this tendency to osseous obliteration or stenosis of the nerve and vascular passages opens the way to interference with function in mastication, in vision, and in audition, and lays the way for other degenerative lesions.

When the process sets in early over a limited area of the base of the skull, what may be its effects on the functions of the trigeminus, which leaves the skull by three openings, each segment traversing a narrow passage or a long cavernous circuit through bony structures?

Branches from the internal maxillary artery provide the necessary nutrition for the greater part of the osseous structure of the face. The course of this vessel is most devious and irregular, its direct and recurrent branches passing in various directions; but the most striking feature noted with this artery is the numerous points where its terminal branches pierce bony walls and furrow out passages for themselves along the dental arches. We shall notice that it is along the course of these vessels, and in the organs supplied by them, that the first signs of decay and death of structure are visible.

Interstitial ossific changes, coincidentally with the augmentation of organic elements, lead to a reduction in volume, deviation in outline, and altered relations, all of which occur earlier, and are more pronounced in the delicate architecture of the face and at the base of the skull.

*Pari passu* with these changes, the vascular supply becomes embarrassed through mechanical impediment in the narrowing of fissures, the foramina, the canals, and the total obliteration of the capillary perforations through the flat bones.

It requires no stretch of the imagination to comprehend the relations of cause and effect in the degenerative changes here enumerated.



In many of the most aggravated instances of trigeminal neuralgia no rational explanation of its cause has been forthcoming. May we not look to these local changes of osseous involution, affecting the integrity of the osseous paths or portals of emergence of the larger nerve roots, in part at least, if not in a larger degree, to explain the cause in many of the most persistent and intractable cases of neuralgia? And may we not assume that in the vertebral neuralgias, or protracted painful affections which involve the various groups of the spinal nerve roots, the *fons et origo malis*, consists in a narrowing or distortion of the intervertebral notches. After middle life, reversion of outline, with a progressive diminution in the length of the spine, is obvious, when it is commonly said that the individual has "grown smaller." At this period the human machinery begins to show unmistakable signs of wear, and the whole nerve structure suffers.

The nerves of the lower segment of the body, the lumbar nerves, are the first to present unequivocal evidence of senile changes, with symptoms of tabes, ataxia, peripheral anaesthesia in the lower limbs, impairment or loss of function in the pelvic or generative organs, the menopause, etc., in the female. The thoracic nerve roots appear to escape, or at all events, thoracic neuralgia, except in the intercostal divisions on the left side in young women, is seldom met with.

The cervical region of the spinal cord in its lower half gives issue to the roots of the brachial plexus. In inveterate brachial neuralgia, without any definite pathological basis, may it not be something more than a mere hypothesis to assume that a degenerative, fibroginous thickening of the local envelope of the nerve, with a steady and constant resorption of the intervertebral discs and narrowing of the intervertebral notches, when the process is sudden and asymmetrical, may provoke and perpetuate a perversion of function in the nerve element?

In the above brief notes my purpose has been to revive an interest in the study of the peripheral neuralgias. The subject is attended with great difficulties, because the physiology

of nerve function is yet, in many important particulars, unsettled.

Pain, clinicians teach, is always an expression of disease, and the essence of disease is morbid anatomy; but in many of the most distressing types of neuralgia we search in vain for any visible or tangible pathological change in structure.

In the so-called "traumatic" neuralgias, we have every reason to believe that the lesion is in the neural filaments of the differentiated structures, rather than in the nerve trunks themselves.

In the types of neuralgia here designated, the *degenerative* theory here enunciated, of a probable aetiological factor emanating from changes attendant on the involution of the body, with a shrinkage and hardening of the skeleton, is not entirely without a *rationale*—at least from a speculative standpoint. It affords a material basis for inductive reasoning, which may open the way for a more effective therapy than is now in vogue, when quite the full limits of our efforts are towards treating symptoms—about where we were twenty years ago in treating appendicitis, cholelithiasis, and most of the renal lesions.

#### DISCUSSION.

DR. CROLYN, of Erie county, said that the reader of the paper had failed to tell us how to get rid of these troublesome neuralgias. Pathology was interesting and important, but the treatment was certainly fully as important. It should be remembered also that many neuralgias occur in the young, and not necessarily in the old. Neuralgia sometimes also persists after excision of the nerve or ganglia. Notwithstanding these omissions, the paper was a remarkably practical one.

DR. MANLEY said that it was his conviction that neuralgias had a pathological basis, although what that basis was had not yet been determined. They were said to be central when the nerve roots were involved; to be conductile when the nerve trunk itself was involved; and peripheral when the terminal filaments were affected. It should be remembered that nerve tissue possesses the greatest resistance to trauma—arteries and tendons might be torn, and yet the nerves remain intact. Another extraordinary property

of a nerve was that of reproduction. He had endeavoured in his arguments in favour of conservatism in surgery, to emphasise this point, and also that it was rare to find a useful stump after any amputation, no matter what the method adopted. This was largely owing to the great tendency of nerves to become regenerated. This also explained the tendency of neuralgia to return, even after a severe operation for the purpose of excision of the nerve. He had become convinced that the nerves were not the only conductors of sensation—that the blood played a part there, there being a vitalising element conveyed along with the nerve. For instance, an Esmarch bandage having been applied evenly to a limb, there would be no pain at first, but after a little while the pain would become intolerable. This could not be explained by pressure on the nerves, for the same degree of pressure could be applied directly to the more superficial nerve trunks without any such result. Again, in a case of sudden cramp of the limb, it was not due to affection of the nerve, but to sudden blocking of the blood-vessel. Pressure was often exerted on nerves by effusions, as, for instance, in cases of subacute pleurisy; and yet there resulted no such pain as was observed after the Esmarch bandage had been applied for some time to a limb. The term “trophic nerves” was often used, yet we were unable to demonstrate the presence of any such system of nerves. These observations would seem to indicate that the changes were vascular and not trophic.

## DIPHTHERIA.

By T. J. ACKER, M. D., of Westchester County.

*Read by title, October 15, 1896.*

There is little doubt but that diphtheria is one of the oldest epidemic diseases of the human race. *Malum Aegyptiacum* was spoken of by Homer and Hippocrates as a disease much to be dreaded on account of its great mortality. Aretæus, at the close of the first century, described *Malum Aegyptiacum* as originating in Egypt and Syria, and those most frequently attacked by the disease were children who had not reached the age of puberty.

Macrobius, who wrote at the beginning of the fifth century after Christ, describes an epidemic of this disease which occurred in Rome in the year 380.

In the year 1557 an epidemic of this disease appeared in Holland, an account of which was written by Forest.

In the seventeenth and eighteenth centuries, other parts of Europe were invaded by this disease. In Spain it was called "garotillo" when it attacked the larynx, often causing death by suffocation, and "fregar" when the disease was confined to the cavity of the mouth. It was described in the writings of Casales, Herrera, Villareal, Vasquez, and others; in Italy by Nola, Scambatti, and others; by Chomel in France, and in England by Huxham, Johnstone, Forthergill, and a number of others. Dr. Samuel Bard studied this disease in North America, and published a dissertation upon "the nature, causes, and treatment of suffocative angina," as it appeared in New York in 1771.

The description given of *Malum Aegyptiacum* by Aretæus at the commencement of the second century, leaves but little doubt that the disease was diphtheria.

Bretonneau, who was the first to make a careful and



accurate study of this disease, gave it the name *Angina Diphtheritis*, and submitted his investigations to the French Academy of Medicine in 1821. Since his time there have been many epidemics of this disease in Germany, France, Holland, England, and America, and, in fact, it has been noticed in nearly every country, affording ample opportunity for its study, and long is the list of names of those who have devoted time and talent in investigating and placing upon record their observations and conclusions as to the cause and nature of the disease. The discovery by Hueter and Oertel, in the blood and diseased tissues of patients suffering from diphtheria, of the vegetable organisms, or bacteria, opened up a new field for study and investigation, and we learn from those who have published their observations that these vegetable organisms, or bacteria, have been found in many organs of the human body, as well as upon surfaces denuded of epidermis, in wounds and in injuries.

Virchow called the medical profession's attention to the parasitic nature of the diphtheritic products discovered by him in the kidneys and endocardium of women who died of puerperal fever.

Since the discovery of the diphtheria bacillus there appear to be at least two opinions as to the cause of diphtheria, one that it is caused by the engrafting or lodgment of the bacilli upon an inflamed or irritated surface, which, for example, may be the tonsils or fauces, where they increase in numbers and produce a poison which is absorbed into the general system of the patient, producing the disease under consideration. The other, that it is a general constitutional disease, or a special dyscrasia of the patient, superinduced by his environments and manner of living, and the presence of the bacilli is a subsequent event.

Just here allow me to say that the object of presenting this little paper is to invite the rank and file of the medical profession to a more energetic study of this disease in relation to its aetiology and therapeutics, and give expression by publication of their discoveries and conclusions, thereby

assisting each other in obtaining facts in regard to the management of this disease, especially in its treatment with antitoxin, as we notice in the current medical literature that there is a difference of opinion as to the value of this agent as a remedy in the treatment of diphtheria. Some claim that the death-rate has been lowered to a fraction over six per cent., while others assert that its employment does not lower the mortality, but that it remains as formerly, about twenty-seven per cent.

I prefer the general plan of treatment by the time-honoured remedies, instead of using antitoxin. The plan that has given me the best results is as follows:

When a case of diphtheria presents itself, and not all cases of tonsilitis with an exudation are diphtheria by any means, as some would have us believe, I seek for the highest room in the house, the higher the better, where an abundance of outside air and light can be admitted at *all times* during the treatment. All unnecessary furniture and other articles are removed from the room. It is then cleaned and sprayed with listerine, also the bed to be occupied by the patient, and all other articles within the room. This spraying is continued every two or three hours during the time the patient occupies it. Chloride of lime is used in all vessels employed to receive the excreta of the patient, removing them often and cleaning the vessels in a two per cent. solution of carbolic acid. Use as little artificial heat as possible. Keep the temperature as low as can well be borne by the patient. Burn no kerosene, as I believe it highly injurious in the sick-room. Use candles. The gases from burning coal should be excluded. In fact, keep the room well supplied with air from the outside at all periods during treatment. Put the patient in bed and keep him there as much as possible. Use every means to keep patient and bed clean.

The remedies employed: First, I administer two or three grains of calomel every three or four hours until the bowels are freely evacuated. The calomel may be given in two-grain doses every second or third night, as the case requires,

afterwards, at the same time the following mixture is ordered:

R. Aquae Destil., ℥iv.  
Tr. Ferri mur., ℥ss.  
Potassae Chlor., grs. xx.  
Flud. Ext. Jaborandi, ℥ss.

M. Sig. One fourth to one third of a teaspoonful every one-half hour in the daytime, except when the spray is used.

R. Hydrate of Chloral, gr. XL.  
Aquae Purae, ℥ij.

M. Sig. Use in atomizer as a spray to throat, internally, every two hours day and night, unless the patient is sleeping.

Sometimes the tincture of aconite or Norwood's tincture of veratrum viride, ten to fifteen drops, is added to the chloral mixture when we desire to lessen the heart's action at the beginning of the treatment. Quinine is used sparingly, not exceeding ten grains in any case, given in divided doses. Lactopeptin and protonuclein, in two-grain doses each, are given in the child's food every four hours. No milk or other articles of diet that will adhere to the inflamed throat are allowed. Beef tea and animal broths are given often; the juices of oranges and pineapples are allowed. Good, pure, and cool water constitutes the beverage; patient may use it freely.

Brandy is withheld until there are signs of prostration, then it is combined with the iron mixture and used in quantities to sustain the patient. When the iron mixture is refilled, the quantity of chlorate of potash should be diminished, as there is some danger of bad effects of the free chlorine upon the kidneys. Tincture of digitalis may, in some cases, as a heart tonic, and a diuretic, be employed.

External application of camphorated oil to swollen glands is all that is employed. There are no clothes or bandaging of neck allowed.

Fellows's syrup of hypophosphites, in quarter to one-half teaspoonful doses, largely diluted with water, and given every

four hours in the daytime, constitutes the medical treatment during convalescence.

No person is allowed in the sick-room except the nurse. The house is quarantined and the members of the household ordered to take a mixture of *Ti. Ferri mur. ʒj*, *Potassae Chlor. ʒss.*, *Aquae, ʒiv*, in doses of one-fourth to one teaspoonful every hour, according to age, and the house thoroughly disinfected with Platt's chlorides, and plenty of fresh outside air admitted into the house.

If this course of procedure is maintained there will scarcely be a second case in the same house at this time.

The writer of this little paper is fully aware of the large amount of literature upon the subject of diphtheria, and deems it prudent not to occupy your valuable time, as he is confident that every Fellow of this Association is well-read on our subject.



## TUBERCULOSIS IN MILK.

By FLORINCE O. DONOHUE, M. D., of Onondaga County.

*Read by title, October 15, 1896.*

During the winter of 1892, the question of transmissibility of tuberculosis from animals to man was discussed at length by the state board of health. The many experiments in the feeding of tuberculous milk, from the time of Gerlach onward, leading to abdominal infection in young animals, were very important facts and the subject was of sufficient importance to cause the state board of health to be clothed with authority to make investigations.

Tuberculosis causes over 12,300 deaths in this state yearly; diarrhoeal diseases, many of which, in children especially, are tubercular, claim 8,800 more. The opinion prevailed in the state board of health that milk from tuberculous cows sealed the fate of many children.

There was at that time no legal machinery in existence in this state giving authority to deal with this question, nor was any other state or country dealing with it, with the sanction of statutory enactment on sanitary lines. The state board of health, therefore, had no precedent to follow and nothing for a guide. A bill was finally drafted, embodying the ideas of the board on this subject, and after much delay and opposition it was passed, and signed by the governor in May, 1892. Under this law, the health inspectors designated by the state board of health are empowered to inspect all the cattle within its boundaries, and to cause any animal suffering from tuberculosis to be slaughtered, the owner of the animal to be reimbursed one half its sound value if diseased, and its full value if not found diseased. This law deals with the largest industry in the state. The value of live stock of the farmers in this state exceeds that of any other in the Union,

amounting to upwards of \$133,000,000. It is estimated that \$40,000,000 worth of milk and its products are consumed in this state yearly, and according to the census of 1890 there were two and one-half million milch cows in the state.

During the year following the passage of this act, 22,000 cattle were examined, and of this number 800 were slaughtered, all of which proved to be tuberculous.

The work has been continued since then, handicapped with meagre appropriations, because of the hostility on the part of dairymen to the work, and because also of so-called economy on the part of legislators. Notwithstanding the difficulties encountered, about 2,500 tuberculous cows have been slaughtered since the work was instituted.

The lesions found on *post mortem* examinations vary from small deposits of caseated tubercles to generally disseminated lesions in different viscera. In many cases, the udders have been found to be the seat of extensive disease.

A large proportion of these animals was common stock, which controverts the generally accepted opinion which prevails, that common bovine animals are immune from tuberculosis, and that only high grade registered animals are prone to the disease. Tuberculosis is not a respecter of breeds; the disease once introduced into a herd spreads with certainty throughout, and with a rapidity proportionate to the sanitary surroundings. The contagiousness of the disease is established beyond a doubt, for in many cases it can be traced from herd to herd in localities where dairymen deal with each other in the purchase of cattle from infected herds.

While New York was the first to undertake this line of sanitation, it is not by any means in advance of other states, notably Massachusetts. Foreign countries are likewise active. Denmark, Germany, Switzerland, France, Belgium, Great Britain, and Australia are making systematic inspection of dairy cattle, with a view of eliminating tuberculosis. Hitherto the great obstacle in the eradication of this disease has been the difficulty of diagnosis. Within the past three

years, however, it was discovered that tuberculin, a product of the bacillus tuberculosis, when subcutaneously injected, caused a febrile reaction local and general, affording a basis for diagnosis. In the most incipient cases, after the exhibition of this agent, there is heightened temperature and systemic disturbances which are characteristic. As a means of diagnosis, tuberculin is so accurate that any competent veterinarian after little experience can point out a diseased animal. This agent is sensitive when tuberculous processes are present, and the reaction following its use is practically certain. Moreover, it is perfectly innocuous in healthy animals, quickly eliminated, and leaves no ill effects.

By the certain means of diagnosis now employed, it is possible to eliminate tuberculous cattle from any herd at a cost that would be small, compared with the steady loss hitherto entailed by the neglect of all precautions against the spread of the disease. The eradication of tuberculosis would be a great national gain, and could not fail to sensibly lessen the prevalence of tuberculosis in human beings, for the relation of the milk supply to infant mortality is insisted upon by all who have made it the subject of systematic observation. It is only within the past few years that attention has been paid to the connection of cause and effect between human and bovine tuberculosis, but because in all the years prior no connection was made between the two it most certainly did not follow that none existed. All the evidence gathered in recent years has indeed established a most intimate connection between the two. In making any attempt to classify diseased animals, it is easy to say that the disease is localised and can do no harm, but in studying the disease it is impossible to decide at what period it becomes general. No one can say absolutely that the germs have not commenced to be circulated in every part of the body, therefore every animal affected should be destroyed, as both their flesh and milk are unfit for food.

As early as 1874, Gerlach experimented largely in feeding milk of tuberculous cows and infected calves, pigs, sheep,

and rabbits in this way; others tried the same experiments, with like results. There was now a lively expectation of the discovery of the germ of tuberculosis and various claims were made, only to be rejected. Klebs, in 1877, and Tous-saint, in 1881, claimed that a minute, motile organism was the infecting element, while Bauchord and Cohnheim claimed this for an immobile micrococcus. Koch of Berlin announced his discovery of the bacillus tuberculosis, fortifying his claim with such an array of facts and conclusive experiments that it was speedily accepted by all scientific men who had patiently studied the question. From that time, the bacillus has been the subject of earnest work by nearly all physicians who occupy themselves with experimental medicine, and a consensus of results shows a thorough endorsement of the contagious nature of tuberculosis.

It would be endless and unnecessary to go over all this. Of all the products of the tuberculous cow, milk is unquestionably the most to be dreaded. It is consumed uncooked by the infant and invalid, whose gastric digestion is often so poor or disturbed that bacilli safely pass through to the intestine. It is usually the sole food of these weak subjects, and thus the bacillus, if present, is liable to be taken in large quantities. In the tuberculous udder, the presence of the bacillus is generally conceded. Of the milk from the apparently sound gland of the tuberculous cow, the reverse can not always be affirmed.

Animals have been repeatedly infected from the milk of sound udders of tuberculous cows. The dangers, especially to the infant and invalid portions of the community, of the use of products from tuberculous animals, furnish abundant reasons why well-considered and systematic efforts should be made to rid our dairies of all trace of tuberculosis.

When the bacilli are taken with food or drink they usually enter the system at one or two different points, through the mucous membrane of the throat or through the intestine. The germ, lodging in the follicles of the tonsil or the ducts of the mucous glands, insinuates itself through



the soft protoplasmic cells of the mucosa and enters the lymph space beneath. Here it may develop and form a local tubercle, or it may pass on in the lymph current to the nearest lymphatic gland, where it is arrested, undergoes proliferation, and develops a tubercle.

There is a source of protection in the acids of the gastric juice. The bacillus seeks a neutral or slightly alkaline medium, and is rendered inactive, or is soon destroyed by exposure to acids. It is in the disordered condition of the stomach, when the acid juice is not secreted in sufficient amount, that the greatest danger exists. In the infant, abdominal tuberculosis is exceedingly common, the infection entering in the uncooked milk and escaping the germicidal action of the gastric juice in the stomach, on account of the frequent overloading and disorder of the stomach.

Accumulated experience and abundant recorded observations now attest that cattle may be and frequently are advanced in tuberculosis while at the same time their general nutrition may be sustained. The mediastinal glands and the general lymphatic system appear to be the favourite seat of tuberculous infection. It is only after some of the important viscera become affected that the animals lose flesh. The fact that in very many cases the lymphatics are first involved proves quite conclusively that the primary mode of infection is through the alimentary canal.

It is certain that bacilli do escape from the alimentary tract through the medium of the blood, and find lodgment in the glandular system. It is easy to understand that through this same medium bacilli may find their way into the milk, although the udder be entirely free from disease.

The obvious results of the work done thus far lie in the evident effects on the education of the people as to the infectious nature of tuberculosis and the means to be taken for its detection and prevention. Good effects will necessarily follow any increase in general knowledge relating to this disease. Public opinion is lukewarm on this subject, and undoubted hostility prevails against the examination of

dairy cattle in some quarters. Even the medical profession has not devoted the attention to this subject of the transmissibility of tubercle to man through meat and milk, that it deserves.

It is doubtless due in a large measure to these reasons that no appropriation was made by the last legislature for the continuance of this work. It is therefore suspended for the present. However, the patent fact and the standing menace to the safety of the people are, that tuberculosis prevails to an alarming extent among dairy cattle in some portions of the state, and the state must awaken to the fact and deal with it. The most cursory examination of the reports and investigations made by the state authorities during the past three years will be sufficient to convince the most skeptical with regard to the importance of the work. The evidence submitted is not hearsay or traditional, but based on actual experimental work, and a consensus of opinion has been arrived at by those entrusted with the work, that much of the milk product as ordinarily consumed comes from tuberculous cows.

# THE VITALITY OF CUTANEOUS EPITHELIUM, WITH REPORT OF CLINICAL OBSERVA- TIONS IN SKIN GRAFTING.

By ZERA J. LUSK, M. D., of Wyoming County.

*Read by title, October 15, 1896.*

At the last annual meeting of the Association, I read a paper describing a "New (1) Method of Obtaining Material for Skin Grafting."

In connection with the subject, reference was made to experiments illustrating a method by which the vitality of cutaneous epithelium is indefinitely prolonged.

Very little emphasis was placed upon the practical importance of the discovery at that time. The subject is, however, fraught with great interest, and numerous experiments have been made to ascertain the "limit of vitality" of skin after its removal from the body.

Dr. E. P. Brewer (2), of Norwich, Conn., experimented with skin removed from amputated limbs. Grafts cut from these pieces were applied in the usual manner, and out of eight trials he found the limit of vitality to be thirty-six hours.

George S. Martin (3) made experiments to ascertain the effect of different degrees of temperature upon the vitality of grafts. He concluded from his experiments that the vitality is prolonged at a temperature just above 32° Fahrenheit, and succeeded in keeping a piece of skin ninety-six hours, grafts taking well. He also reported a difference in favour of confined air.

In 1877, Dr. J. H. Girdner (4) did skin grafting successfully with skin removed from the thigh of a young man six hours after death.

Dr. Freeman (5), of Denver, Col., successfully employed the cuticle raised with cantharides after it had been attached to the blistered epidermis from twelve to fourteen hours.

All these experiments prove that cutaneous epithelial cells are possessed of wonderful vitality.

The material employed in skin grafting is the cuticle or external layer of the skin cut out so that only the epidermis and Malpighian layers are included; and I have found that their viability depends not upon the low temperature or confined air, but solely and absolutely upon the elimination of all moisture.

The cuticle dries very soon after its removal; and if it is kept free from moisture it will retain its vitality for an indefinite period, and when properly prepared and applied to a granulating surface, it will become revitalised, developing rapidly into as perfect a covering as can be obtained by any known method.

In 1877 and 1878, Signor Italo Giglioli (6) began a series of experiments to determine how long the vital principle can exist in seeds. They were deposited in various gases and solutions, and in 1894 were taken out and planted; only a small portion of the seeds germinated. He writes, in conclusion, that if he had known how deadly moisture is to seeds kept in gas, he could have saved a larger proportion of them, and that he suspects "that latent vitality may exist for an indefinite period, when sufficient care is taken to prevent all interchange with the surrounding medium."

A well-known physiological fact in connection with blood-corpuscles, when they have been completely dried, as in blood spilled upon the floor or clothing, months or even years after, they can be made to assume their characteristic form by being moistened with a liquid of the density of serum, and if the manipulations be carefully conducted the corpuscles may be recognised without difficulty with the aid of the microscope (7).

The following case and experiments serve to verify the foregoing:



CASE I.—E. S., salt lifter, twenty-five years of age, fell into a pan of boiling brine, January 14, 1895; whole body immersed and terribly scalded. So extensive were his injuries that recovery seemed impossible; however, one month later, after enduring all the sequelae incident to such accidents, and although extremely emaciated, with nearly one fourth of the body a raw, granulating surface, favourable symptoms appeared, giving hopes of ultimate recovery. On February 16, I did skin grafting in the presence of attendants and others. The following material was successfully employed:

Attached to the body were numerous patches of dried cuticle, the result of vesication from scalding. They were dry, hard, and crisp, having been separated from the cutis thirty-three days. A patch of this dry epidermis adhering by one edge to the dorsal surface of the right foot, it was removed, softened and sterilised in warm boric acid solution. Grafts one twelfth of an inch square were cut and applied to the anterior granulating surface of the left thigh. The result was eminently satisfactory, a majority of the grafts taking nicely and developing into perfect islands of skin. The subsequent treatment consisted in the use of this dried epithelial tissue, with which these large, granulating surfaces were covered with substantial skin by April 1. About two inches below the great trochanter of the left thigh, a deep slough occurred, leaving a granulating surface three and one-half inches in diameter. At the proximal end of the great toe there was a dry, bleached patch of skin attached to the ends of the hair, which had been completely isolated from the body forty-eight days. This was softened in boric acid solution, and grafts one twelfth of an inch square applied. With this material, the raw surface was perfectly healed in twenty-one days.

CASE II.—M. C. (8), a healthy young Irishman, slipped into a pan of boiling brine, December 3, 1895, severely scalding both legs. Sloughing took place, leaving a raw, granulating surface five inches long by three inches wide, two inches above the inner malleolus of left leg. December 26, I did skin grafting, using a patch of dried skin attached by one edge to the dorsal surface of the right foot. It was moistened and softened in a warm solution of boric acid, and grafts one twelfth of an inch square applied. They took well, and on January 24 this surface was perfectly healed.

On December 26, the date skin grafting was done, I removed several patches of the dry skin (which adhered in

places where large blisters had been caused by scalding), placed them between layers of sterilised cotton, tucked them into an envelope, which was labeled with the date the skin had been separated from the cutis, viz., December 3, 1895, and laid away in my office desk. An opportunity occurred of testing its vitality upon the following case:

On January 7, 1896, I was called to attend F. H., German. While chopping wood with a double-bitted axe, it became set in the log; in his efforts to liberate it, the axe flew out, striking the dorsal surface of the right foot, over the tarsometatarsal articulations, cutting a gash two and one-half inches wide, and paring off the skin for about two inches. The wound had been dressed with various ointments, and I found the foot swollen, with a large, unhealthy, granulating sore on its dorsal surface, bathed in foul-smelling discharge. I curetted and treated antiseptically, and on January 12, five days later, I did skin grafting, using a patch of the dried skin which had been in my office desk as described. It was softened in boric acid solution, and grafts one twelfth of an inch square were applied in the usual manner. They took readily, developing rapidly into substantial epithelial covering by February 1, at which date it was perfectly healed.

The next case of skin grafting with this material was done some months later:

J. O., switchman, was making a coupling April 2, 1896, when his right hand was crushed. The skin on the back of hand and fingers was lacerated and contused. Amputated the first three fingers at the distal end of proximal phalanges, and the fourth finger at the distal end of the second phalanx, using the strips of skin for flaps. Everything went well for ten days, when he neglected to come for treatment, indulging in the meantime in a spree ending in a fight, so that when he appeared five days later, the dressings were loose, filthy, and saturated with pus. Sloughing occurred, and the surface of the hand, from the middle of the dorsal aspect to the end of the second and third fingers amputated, was covered with unhealthy, pus-secreting granulations. On May 15, assisted by Dr. C. C. Mann, I did skin grafting, using a patch of the dried skin before mentioned, which was separated from the cutis on December 3, 1895. It was treated as in previous cases, and grafts of the same size applied. They grew well; indeed,

scarcely a graft failed. Their growth and development were vigorous and rapid, so that one month from the date of operation the whole surface had a good, substantial, epithelial covering, which at this time, nearly six months since date of operation (with the exception of a few red patches), is not tender and has the appearance of natural skin.

So far as I can learn, the longest period that a graft had been made to live and grow after its removal was ninety-six hours, or four days, as demonstrated by the experiment of M. Martin. The prolonged vitality of the skin was attributed by him to the low temperature at which it was kept. I am inclined to think that its longevity was due to its being dry, or nearly so, and that molecular change was thus delayed.

In my first case, the material used had been separated from the cutis forty-eight days; in the second case, thirty-three days; and in the third case, the skin was separated from the cutis December 3, 1895, removed on December 26, and laid away in my office desk, protected by dry, sterilised, borated cotton; it was successfully employed forty days after its separation from the cutis and seventeen days after its removal from the body; fourth case, the material employed was the same as that used in case three, and had been separated from the cutis one hundred and sixty-four days and from the body one hundred and forty-three days.

It will be observed that the skin employed in the cases reported was separated from the cutis by vesication from scalding. Equally as good results can be obtained with grafts cut from skin raised by vesication with cantharides. By far the best vesicant plaster I have used is the one called "Canthos." With it the cuticle is separated in from two to three hours without pain or danger of causing strangury. The practical importance of this discovery is apparent, its value to the surgeon being as follows:

1. Opportunities frequently occur by which an abundance of good, healthy material can be obtained, for example, in injuries necessitating amputation of limbs or deaths from accident.

2. This method being painless, the surgeon can take time to carefully select his material, and especially to see that the skin contains only the epidermis and Malpighian layers.

3. The cuticle being thus separated will soon become dry and hard at a temperature between 40° and 70° F., and if protected from moisture, the surgeon can at all times have ready for immediate use the very best material for skin grafting it is possible to obtain.

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# SUPPLEMENTARY NOTES ON TENDON GRAFT- ING AND MUSCLE TRANSPLANTATION FOR DEFORMITIES FOLLOWING INFANTILE PARALYSIS.

By SAMUEL E. MILLIKEN, M. D., of New York County.

*October 15, 1896.*

At the last annual meeting of this Association, I presented a successful case of tendon grafting for infantile paralysis (*New York Medical Record*, October 26, 1895). My other cases of a like character at that time were too recent to call for other than a passing comment. However, at present it affords me great pleasure to state that the past year's experience has brought forth results beyond the expectation of the most ardent advocate of this comparatively new treatment.

While the operative technique has not been changed, the applicability for such surgical interference has proven to be much wider than I had at first expected. In other words, the number of patients with the various group or individual muscle paralyses due to anterior poliomyelitis can in many instances be relieved by tendon grafting or muscle transplantation when other measures, such as electricity, mechanical appliances, and even tenotomy have only furnished temporary or partial restoration of the function of the paralysed member.

Since February 14, 1894, I have performed fourteen operations upon nine different patients afflicted with various degrees of deformity due to infantile paralysis. Of this number five of the patients required one operation, three patients two operations each, and in only one case were three distinct tendon graftings performed.

## OPERATIONS.

1. Partial or complete transplantation of the sartorius muscle into the sheath of the paralysed quadriceps extensor of the thigh (twice performed).

2. Grafting of the extensor proprius pollicis to the paralysed tibialis anticus (five times).

3. The gastrocnemius was attached to the paralysed peroneus longus and brevis (twice).

4. Extensor longus digitorum was attached to the paralysed tibialis anticus (once).

5. The tibialis anticus was attached to the paralysed extensor longus digitorum (once).

6. The extensor proprius pollicis was attached to the extensor longus digitorum (once).

7. The flexor longus pollicis was transplanted onto the anterior surface of the leg and attached to the tendon of the paralysed tibialis anticus (in one instance).

8. A graft was taken from the deltoid and attached to the tendon of the paralysed triceps of the upper extremity (once).

It will be seen by the above that of the fourteen operations upon nine patients, eight distinct forms of paralysis were encountered.

In my first paper, I emphasised the importance of asepsis and minute technique in dealing with the tendon grafts, and also the preservation of their respective sheaths, as it is essential that we should obtain primary union of the wound throughout, thus insuring the greatest degree of usefulness for the grafted or transplanted member upon which additional work has been placed.

In but one of the fourteen operations did I fail to obtain the union between the transplanted muscle and its new attachment, and that was in my first attempt to transplant the sartorius muscle onto the anterior surface of the thigh, with the hope of supplying the quadriceps extensor, which was paralysed. This failure of obtaining union between the

sartorius muscle and its new attachment, the patellar sheath, might be accounted for in part by the fact that the flexors of the leg on the thigh were greatly contracted, thus making too much tension at the site of union.

However, my second attempt at supplanting the paralysed quadriceps by transplanting two thirds of the sartorius into the sheath of the vastus internus and attaching it to the patella, is best shown by the patient which I present to-day.

The operation just described was performed on December 19, 1895. A previous operation, that of taking a graft from the extensor proprius pollicis, and attaching it to the tibialis anticus, had been done by me on November 4, 1895.

This little patient was referred to me by Dr. W. A. Goodall, of this city. The history of the patient was that usually given in cases attacked with anterior poliomyelitis, which is too well known to call for any description. The attack occurred August 2, 1895, about eight weeks before I first saw the patient, and resulted in the loss of the use of the left lower extremity so far as the ability of the child to walk was concerned.

This very flattering result can, I consider, in a certain measure be attributed to the fact that the operation was performed while the patient was yet young, being only two and one-half years of age, and before the usual contractions and distortions had resulted.

In this case a long spring was worn until June 1st, a little more than five months after the second operation, which enabled the patient to walk by stiffening the knee. During that five months, the Faradic current was applied twice a week, together with the daily use of massage to the sartorius and extensor proprius pollicis muscles.

As soon as it was found that the patient could walk without the use of the brace, it was noticed that the power in these two muscles rapidly increased, and since June the Faradic current has not been applied, and we are depending solely upon the natural use of the limb, together with massage, which is carried on by the mother.

The atrophy of the quadriceps extensor clearly demonstrates that without the second operation (that performed on the sartorius muscle) our patient would be compelled to wear a brace which would stiffen the knee in order to walk. The fact that the limb is somewhat abducted is due to the partial attachment of the sartorius at its original site on the inner side of the tibia, and in my future operations for this deformity I shall transplant the whole muscle instead of, as was done in this case, only taking two thirds of it.

In the second series I have been able to follow all five of the cases, and it has been clearly proved that the extensor proprius pollicis can be sufficiently developed to carry on the work of the paralysed tibialis anticus.

Third series. In the two cases where the gastrocnemius was made to supply the peronei, both patients were kept under observation for over twelve months, and the apparatus in each instance was left off and the walk was greatly improved.

Fourth series. In the one case where the healthy extensor longus digitorum was attached to the paralysed tibialis anticus, there was a decided improvement in the position of the foot when I saw the patient some three months after the operation. This case was operated upon by me before the members of the Dutchess County Medical society, in Poughkeepsie, N. Y., on January 8th, 1896, the patient having been referred by Dr. John S. Wilson, health officer of that city.

Fifth series. Just the reverse of the above, that of taking a graft from the tibialis anticus and attaching it to the paralysed extensor longus digitorum, was performed on one of the cases of series three.

Sixth series. The extensor proprius pollicis, which was once made to supply the paralysed extensor longus digitorum, was the other case of series three, which had paralysis of the perinaeal muscles. This case, it will be seen, required three distinct graftings in order to re-establish the normal symmetry.



Seventh series. In the one case where the flexor longus pollicis was transplanted onto the anterior surface of the leg and attached to the tendon of the paralysed tibialis anticus, the wound healed primarily, but I question whether the result justified the operation, although I have not been able to follow the case, as the patient resides in Providence, R. I.

Eighth series. The case in which the graft was taken from the deltoid and attached to the tendon of the paralysed triceps of the upper extremity was purely experimental,—the patient, a little boy of two years of age, also referred to me by Dr. Goodall of this city, I present to-day. There is great improvement, as the patient is able to fully extend and flex the forearm, although the paralysis of the triceps remains.

#### CONCLUSIONS.

1. Infantile paralysis in the majority of instances attacks groups of muscles or an individual muscle of a group.

2. Operative interference should be practised with the hope of re-establishing the symmetry of the limb, and can be accomplished in one of two ways:

*a.* When the whole group is paralysed, a healthy muscle with the proper origin must be transplanted and given the insertion of the paralysed group.

*b.* When only part of the group is involved, tendon grafting should be performed, that is, making one or two muscles do the work of those paralysed.

3. Animal suture material, preferably kangaroo tendon, should be employed on the tendons and muscles, and in the closure of the sheath. As this material requires twenty-one days for absorption, it will usually be found that at the expiration of that time perfect union will have been obtained.

4. The skin wounds should be closed with interrupted catgut and the sealed dressing of cotton collodion applied.

5. Perfect immobilisation of the limb can best be obtained by the plaster-of-Paris splint.

6. The best results of such operative procedures can only

be obtained in young subjects, so as to take advantage of the natural growth of an otherwise undeveloped muscle, upon which we place additional work, as it would be unnatural to expect a man who has led a sedentary life up to the age of fifty to at that time assume the arduous labour of a mechanic.

#### DISCUSSION.

DR. L. J. BROOKS, of Chenango county, said that he wished to ask regarding the amount of separation of the muscles in making the attachment, and also as to whether the suture used was continuous or interrupted. He would also like to know what was done in cases in which there was a strong spasmodic action of the antagonising muscle. Lastly, he wished to know how long after the attack this operation should be resorted to.

DR. WILSON, of Columbia county, asked if paralysis of the arm, noticed within a month or so after the birth of a child, could be treated in this manner, and how early Dr. Milliken would do the operation.

DR. MILLIKEN said that the amount of separation depended upon the particular muscle operated upon. In the case of the sartorius he exposed the muscle for three or four inches, whereas in the case of the smaller muscles on the anterior surface of the leg—*e. g.*, the extensor proprius pollicis—he exposed about an inch and a half, and the flap taken measured from three-fourths to one inch. He always removed the redundant portion of the tendon, and employed an interrupted suture. He had not met with marked spasm of opposing muscles, as he had operated chiefly in long-standing cases. He made it a point to correct the deformity under an anaesthetic by means of manual force. So far, he had not operated upon any cases where there was any marked bony displacement or muscular spasm. Where there was much spasm, he would prefer tenotomy. The question of the time for the performance of the operation was a matter of much importance, and probably the neurologists would criticise his operating so early on some cases. It was generally stated that the reaction of degeneration did not occur until six months after an attack. In the cases presented, six months had not elapsed, but the fact that the paralysis remained showed, in his opinion, that it would be permanent. By operating early we saved just so much time. He believed if the galvanic current did not show improvement of the muscles in two months, it was not

wise to longer postpone operation, for the younger the patient, the better the results. This was exemplified by the two cases just exhibited. He had not met with any cases of paralysis occurring at birth which demanded operation. At the present time, he had under observation a case of traumatic paralysis of the extensors of the fingers and hands, and he had not decided just what course he would pursue here. So far, his work had been confined to cases of anterior poliomyelitis.

DR. WILSON said he had asked the question because he had under his care at present a little infant of four months, who was born after a very difficult labour. The child had developed an inability to use the right arm.

# BRIEF COMMENTS ON THE MATERIA MEDICA, PHARMACY, AND THERAPEUTICS OF THE YEAR ENDING OCTOBER 1, 1896.

BY E. H. SQUIBB, M. D., of Kings County.

*Read by title, October 13, 1896.*

It is agreeable to report that in a general way the craze for novelties somewhat subsided during the past year, although there are abundant evidences that the mill is still grinding, especially in that ever fertile source of supply—Germany. The possible combinations of elements, as well as the products resulting from constant chemical manipulation, are practically inexhaustible, and therefore the end may be looked for at infinity.

## ALPHABETICALLY ARRANGED.

*Acetanilid* (antifebrin) continues to be used on a very large scale throughout the world. Its topical uses are increasing very rapidly, owing to the many advantages claimed over iodoform. It has been claimed that it has “no disadvantages whatever,” but this statement can hardly be borne out, for there continue to be frequent reports of intoxicating and poisonous effects from its use. It must be admitted that it should not be used recklessly, nor should it be expected to be harmless under all conditions, for there are still too many reports of its toxic action not to take warning. Its internal use in the popular “headache powders” still needs watching, and physicians should caution patients about the too ready appeal to these powders whenever any little physical derangement occurs.

*Acetic Acid* as a solvent continues to give gratifying results. Further experimentation has shown that a 10 per cent. strength can be used successfully in the preparation of pharmaceutical extracts as a substitute for alcoholic menstrua in a large number of cases, particularly with drugs whose value depends on the alka-



loidal principles. The extracts made give every indication of being equal therapeutically to those made with alcohol, and consequently at a largely reduced cost.

*Acid Carbolie* (phenol) has baffled all investigation up to the present time when turned toward an explanation of its alteration in colour. No one has yet been satisfied with the explanation given.

As a remedial agent, however, it still holds its own among its many rivals. Dr. R. Milbourne West, M. R. C. S., L. R. C. P., of Leicester, England, has made successful use of it in the local treatment of carbuncle, giving most satisfactory and rapid results when used in solution in glycerin (1 to 5). One to 2 cc. (about 20 to 30 minims), "according to the size of the carbuncle, is injected into the surrounding inflamed indurated tissues, and not into the slough itself."<sup>1</sup>

Assistant Surgeon C. Brian Dobell, M. B., of the Tewkesbury (England) Hospital, has reported a case of bronchiectasis treated by inhalation of coal tar creosote vapour in a very emaciated patient forty years of age.

"The beneficial effect was immediate. After the first inhalation of ten minutes the cough was improved, the expectoration and breath less foul, he slept better, and the temperature, which had been rising steadily for a day or two, began at once to fall. (See chart.)" An interesting chart accompanies the report.<sup>2</sup>

*Acid Citric* still continues to receive attention in the chemical laboratory. As alluded to here last year, Dr. T. L. Phipson, of Putney, England, claimed he had produced it from cane sugar. Others criticised his results, and although he still maintains his points, and apparently has his actual results in evidence,<sup>3</sup> still it is probably only fair to his opponents to point out to those who may be interested in the subject where the latter's claims may be found. Messrs. Alfred B. Searle and Arnold R. Tankard, of Sheffield, England, have been the most prominent on the opposite side.<sup>4</sup>

*Acid Picric* (tri-nitro-phenol) in the treatment of burns is still kept before the medical profession by Dr. Paul Thiéry, of Paris, France, for at the opening of the year he published in the *Gazette des Hôpitaux* two papers still further discussing its utility, especially "where the deeper layers of the true skin have not been

<sup>1</sup> Brit. Med. Journ., vol. i for 1896, p. 591.

<sup>2</sup> Brit. Med. Journ., vol. i for 1896, p. 1502.

<sup>3</sup> Chemical News, vol. lxxii, pp. 190, 257.

<sup>4</sup> Chemical News, vol. lxxii, pp. 31, 235, 268.

entirely destroyed. In these circumstances the use of ointments and emollient dressings has an effect which often hinders healing, since their action is rather keratolytic than otherwise—*i. e.*, they do not in any way assist in the transformation of the superficial layers of epithelium into the harder keratinised condition which is necessary in order to bring about satisfactory repair. Picric acid, on the other hand, has this power in a marked degree, and by this means the superficial layers of epithelium can readily be hardened and fixed so as to render the surface insensitive and capable of being exposed without harm. Two objections have been raised to its employment—*viz.*, that it is toxic and explosive; but both of these ideas are negated by the author. In fact, he has applied a dressing moistened with a saturated solution of the acid to an abraded surface corresponding to quite one third of the surface of the body without harm. To avoid soiling his hands with the solution, it is well that the surgeon should use india-rubber gloves when applying the dressings. A certain amount of tingling pain may be experienced by the patient for a few minutes, but this soon wears off, and the acid is then found to exercise an analgesic effect. The best results are obtained if the dressing is applied as soon as possible after the burn, and if no other treatment has been previously adopted. A saturated solution made with distilled water is employed, and where the burn or abrasion is extensive, it is recommended that the part should first be totally immersed in a bath of the fluid, and then dressed with compresses of lint or gauze wrung out of the solution; these in turn are covered with absorbent wool and bandaged on, so that the dressing may become dry. For burns of the first degree, healing is often obtained in one or two days after the first application. In the deeper burns it may be necessary to re-apply the dressing once or twice. The second paper deals with other conditions, which may be treated in the same way, and offers various suggestions as to the applicability of the process. We note that blisters are said to do best when dressed in this way, as also hangnails, superficial excoriations, some forms of eczema, lupus, etc., and, in fact, it may be useful in any conditions where its antiseptic, analgesic, and keratoplastic properties may conceivably be of value in bringing about healing.”<sup>1</sup>

Mr. D’Arcy Power, M. B., of Chelsea, England, fully confirms Dr. Thiéry’s results in “A Note on Picric Acid in the Treatment of Superficial Burns and Scalds.”<sup>2</sup> He concludes as follows: “I have

<sup>1</sup> London Practitioner, vol. lvi, p. 666.

<sup>2</sup> Brit. Med. Journ., vol. ii for 1896, p. 651.

used this method for more than a year in hospital practice, both amongst out-patients and in-patients, and I have every reason to be thoroughly satisfied with the results I have obtained. It is not an ideal method, for it stains the clothes and discolours the hands of the surgeon, but it is a great improvement upon anything else I know of."

Delpech offers a specially prepared cotton-wool for such applications. He simply steeps absorbent cotton in a saturated solution of picric acid, and then dries it. Just before using, it is to be dampened with water and applied wet.

*Acid Salicylic* appears to have given considerable satisfaction for some time past simply as an external application in the treatment of the inflamed joints in rheumatic fever, and without any friction being applied. Professor Bourget of Lausanne, Switzerland, reports having experimented with the following ointment underneath a binding of flannel:

Acid Salicylic	.	.	15 grammes (about 4 drachms)
Turpentine	.	.	15 " ( " 4 " )
Lanolin	.	.	15 " ( " 4 " )
Lard	.	.	125 " ( " 4 ounces )

"Within half an hour after the application the urine yields a strong reaction of salicylic acid. The result of twenty quantitative examinations shows that the total amount of acid eliminated in the twenty-four hours varied from 20 to 84 centigrammes (3 to 14 grains). For two years every case of acute rheumatism admitted into Bourget's wards was treated by the application of this ointment to the exclusion of all other treatment. No salicylate was administered internally. The results are as follows: Pain disappears a few hours after the application of the ointment; swelling diminishes as early as the second day; temperature comes down between the third and fifth day. Lastly, this method of treatment is never attended by any accidents, which are occasionally observed to follow the internal administration of salicylates and allied bodies. This method is also much less expensive than others in general use.<sup>1</sup>

*Actol* is the short name given to the salt silver lactate which has been recommended by Dr. Crédé, of Dresden, Germany, as an efficient surgical antiseptic. He recently reported his observations at a meeting of the Medical Society of Dresden. He has evidently been working in the same line as observers at the Johns Hopkins

<sup>1</sup> London Practitioner, vol. lvi, p. 445.

Hospital, Baltimore, Md., have been for some time past, in using finely divided metallic silver and foil in the dressing of wounds. He found that apparently the silver combined with the secretions of the micro-organisms containing lactic acid, forming this salt, which is destructive to them. A 1 to 1,000 solution of the salt destroys the micro-organisms in five minutes, and a 1 to 50,000 arrests their development. He frankly points out that this fact has been recognised before by many of the older observers, but apparently no practical use of it had been attempted. Actol is described as a fine, colourless and odourless powder, without toxic properties, and giving little irritation when used on all kinds of open wounds. It, however, has a tendency to cake, and therefore may be disappointing when desired for a dusting powder. The citrate, under the name of "itrol," is therefore to be preferred as a dusting powder. Actol is best employed in solution. It has been used subcutaneously in doses of about 10 milligrammes (3-16 grain), and as a mouth wash and gargle in a weak solution made by using about a teaspoonful of a 2 per cent. solution to a glass of water.

*Äirol* (bismuth oxy-iodo-gallate), one of the more recent substitutes for iodoform, has received some prominent attention since alluded to here last year. Professor Veiel, of Vienna, Austria, reported his experience with this agent before the last German Dermatological Congress. He used it first in the treatment of ulcers of the leg. These rapidly became painless, and their secretion diminished extraordinarily. The granulations became much firmer, and showed none of the tendency to overgrowth which is so common with iodoform. The inflammation of the neighbouring skin, which is sometimes seen with iodoform and less often with dermatol, was absent with äirol. This agent is therefore strongly recommended in ulcers of the leg, particularly when complicated with eczema. Professor Veiel also found it most efficient in the treatment of ingrowing toe-nail with dermatitis repens, and in the treatment of small fresh and infected wounds, where its disinfecting power appeared to be greater than that of iodoform. The obstinate fissures of the nostril accompanying sycosis of the upper lip, which so often lead to erysipelas, heal rapidly under the influence of 10 per cent. äirol ointment. Lupus ulcers skin over very rapidly, but äirol has no specific action on the disease any more than iodoform has. Professor Veiel concludes that äirol is in many cases superior to iodoform, for it is inodorous, non-toxic, and non-irritant, while at the same time it greatly diminishes the secretion.



Dr. C. Hägler, of Basle, Switzerland, has made successful use of it in fully 2,000 cases of operative wounds and ulcers of various kinds. At his surgical clinic he dresses wounds as follows:

"The operation terminated, a little *airol* is blown among the edges of the loss of substance, and when the wound has been closed by suturing, a rather thick layer of this powder is applied to the line of sutures, the whole being covered with 20 per cent. *airol* gauze, and on top of this is applied an ordinary septic dressing.

"In the numerous cases treated in this manner, Dr. Hägler has never, in spite of the absence of drainage, met with complications interfering in any way with the process of healing. The drying effect of the *airol* is strikingly manifested on the edges of the wound, which within from twenty-four to forty-eight hours are found to be held together by a narrow crust, partly composed of *airol*. Neither eczema nor any other symptom of irritation of the skin was ever observed at the circumference of the wound, and the cicatrices obtained were irreproachable.

"Applied to ulcers and burns, *airol* rapidly dries them, stimulates granulation and epidermisation, and hastens cicatrisation.

"Dr. Hägler has also employed a 10 per cent. emulsion of *airol* in equal parts of water and glycerin for injection into cold abscesses, frequently with favourable results, but the cases of surgical tuberculosis in which this treatment has been tried are not yet sufficiently numerous to permit of forming a definite judgment of its value as compared with iodoform.

"Lastly, excellent results have been obtained in small wounds of the face, head, and limbs from the use of 10 per cent. *airol* colloidion, applied over a thin layer of aseptic cotton wool. This dressing adheres firmly and exerts no irritating effect on the skin."<sup>1</sup>

Dr. Gallemaertz, of Brussels, Belgium, records several severe cases of ulcer of the cornea in which he found this agent invaluable. In applying it he first tried dusting it over the surface of the eye, but found it produced so much temporary pain that afterwards he contented himself with touching the affected spot with cotton wool dipped in the *airol*, previously applying solution of cocaine hydrochlorate in cases where any considerable quantity of *airol* was to be employed. He concludes that *airol* is greatly to be preferred to iodoform.

Drs. Legneu and Lévy reported at the meeting of the Paris society of Dermatology and Syphilography on Thursday, February

<sup>1</sup> The Medical Week, vol. iv, p. 72.

13th last, that they had employed this agent successfully in cases of gonorrhea. They used the following emulsion :

Aïrol . . . . .	2 grammes (30.9 grains)
Water . . . . .	5 “ (77.2 “ )
Glycerin . . . . .	15 “ (4 drachms)

*Alumnol*, the astringent and antiseptic, has been heard of still less in the current medical literature than last year. Undoubtedly it is still in use, but apparently reports are not made upon it. A mixture of four parts of alumnol with four parts of aristol and fifteen parts of dry starch has recently been recommended to be dusted inside of the stockings for the treatment of excessive sweating of the feet.

Dr. I. N. Grammatikati, of Tomsk, West Siberia, has obtained very gratifying results in cases of catarrhal endometritis and other forms of metritis, as well as in salpingitis and pelvic exudation, from intra-uterine injections of the following mixture:

Alumnol . . . . .	2.5 grammes (38 grains )
Tincture of Iodine . . . . .	25.0 “ (6½ drachms)
Rectified Spirit . . . . .	25.0 “ (6½ “ )

*Ammonol* (so-called Ammoniated Phenyl-Acetamide), the antipyretic, analgesic, and stimulant alluded to here last year, is still kept before the medical profession by the enterprising firm which distributes samples and extols its advantages, but practically nothing has appeared upon it in the prominent medical journals of the past year, except in the advertising pages. It has been reported that it “consists of acetanilid and ammonium carbonate.”

*Amygdophenin* is a new compound derived from paramidophenol, and analogous to phenacetin. In paramidophenol, one atom of hydrogen is replaced by an amygdalic acid radicle and another by ethyl or methyl carbonate to form this new agent, which is strictly ethyl-amygdo-phenin. It is described as a fine, light, crystalline, greenish-white powder, difficultly soluble in water and therefore can be agreeably administered in the powder form, although it has been exhibited in tablets.

Dr. R. Stüve, of Frankfort-on-the-Main, Germany, has made a very careful clinical study of it in the hospital service of Professor von Noorden in the treatment of acute articular rheumatism, in neuralgic pains, and as an antipyretic. He reports on 20 cases of articular rheumatism, 11 of which were accompanied with fever. In 7, marked improvement was evident in two days. The local

symptoms and fever disappeared completely by the end of four to six days. With the exception of one patient, who brought on a relapse by leaving his bed too soon, the cure was apparently permanent in all. One patient had been annoyed by the buzzing in his ears caused by sodium salicylate in previous attacks, but when amygdophenin was given him, there was no accompanying annoyances, but recovery in less time than ever had occurred with sodium salicylate. In 4 other cases the result of the use of amygdophenin was not alike in all. The effect was not very successful in two cases—one with cardiac trouble, and the other showing extremely slow recovery. On the other hand, good results were obtained in one case where there was serious aortic insufficiency; marked improvement followed the administration of three grammes (46.3 grains) of amygdophenin, which cured completely an intercurrent and slightly febrile attack of acute articular rheumatism. The only absolute failure in the use of this agent was in a case of pain in the joint of one knee. But this was probably a blennorrhagic rheumatic trouble, in which all the other antirheumatics have even less efficiency. In the 4 cases of febrile articular rheumatism, the amygdophenin produced a complete and rapid cure, with one exception. This was a case of simple pain in the joints without objective phenomena of any kind. In one case the amygdophenin was replaced for a few days by sodium salicylate, which had no perceptible effect, and not until the amygdophenin was renewed did recovery continue to a permanent cure. As an antipyretic it was tried on some phthisical patients with fever. Five hundred milligrammes (7.7 grains) had no effect upon the temperature. One gramme (15.4 grains) reduced the temperature two degrees C. in one case with profuse perspiration, but in others the same dose only reduced the temperature one-half to one degree C. and not at all in others. It is therefore impossible to rely upon amygdophenin as an antipyretic in these doses. In neuralgia it produced good results in several cases, but its effect was only palliative. However, it was noted that it acted well even in cases where the pain had a central origin, as in tabes, sclerosis, and the like. It was given in 1 gramme (15.4 grains) doses from one to six times a day, at first in powders and later in tablets. One gramme (15.4 grains) doses never produced any accompanying annoyances in the whole series of observations, amounting to about 1,000. In one, the patient after taking 5 grammes (77.2 grains) in twenty-four hours, complained of a slight vertigo; another who had taken 6 grammes (92.6 grains) noted a buzzing

in his ears, but both of these disappeared at once when the amount given daily was reduced. No exanthema was observed in any case, nor dyspeptic symptoms, nor renal inflammation. Three cases only had perceptible sweats. Dr. Stüve concludes his observations with the announcement that in amygdophenin a most valuable remedy for rheumatism is offered. It acts in cases where the other antirheumatics, such as sodium salicylate, either produce no effect whatever, or must be discontinued on account of accompanying disturbances. As to its use in pyrexia and neuralgia he does not consider the limited number of observations on record as sufficient to warrant an official opinion.

No other observer has yet reported on this agent.

*Antinonnin* is the trivial name given to a new, yellowish, pasty compound found by C. O. Harz and W. von Miller to be a potassium ortho-di-nitro-cresolate, and recommended as a disinfectant and parasiticide. When applied to plants and masonry in solutions (best in a soap solution) varying from 1 to 2,000 to 1 to 100, it is claimed to destroy all the commonly injurious parasitic growths like dry-rot and mildew without affecting the plants or masonry themselves. It is quite readily soluble in water, staining everything that will absorb it a bright yellow colour. Professor Aubry, of Munich, Bavaria, finds that although yeast is not deteriorated by it, even when treated with a 5 per cent. solution, the bacteria present are destroyed. It has been employed in skin affections due to animal parasites. A 1 per cent. aqueous solution has been used as a preventive against fungoid growths, although its staining property is a drawback. It is odourless, non-volatile, and inexpensive, but is poisonous. It is too little known yet to expect more definite reports.

*Antinosin* is the antiseptic alluded to here last year under the heading *nosophen*, as it is the sodium salt of *nosophen*. It still continues to be used abroad, particularly in Germany, and Drs. P. Unna and A. Herz, of Hamburg, Germany, now report on their successes with it in the treatment of soft chancres by applying the powder very thoroughly to the well-cleaned sore. From two to six applications only seem necessary to convert the sore into a simple wound which soon heals. It being such a harmless agent, these two observers report that it may be used freely on very extensive wounds. It is reported to act as a very satisfactory haemostatic, and not to irritate. It is now being used in this country, but no clinical reports of importance have yet been made in the medical literature.



*Antiphthisin*, the purified tuberculin of Prof. Edwin Klebs, has been considerably "investigated" both chemically and clinically during the past year, and although reports are made which seem to be forcible both for and against it, the conclusion is unavoidably drawn by conservative observers that an agent which needs so much defending is still much in doubt. Its preparation is now restricted by patents which limit its usefulness, as Professor Klebs has surrendered all his rights in it. He evidently has not lost faith in it, for he continues to refute criticism; however, he now permits all pecuniary advantages to accrue to others under patents. There may be brilliant results forthcoming, but nothing convincing has yet been reported.

*Antipyrin* (phenazone) is still one of the most valuable of the coal-tar products. Its unfortunate depressant and toxic effects, however, continue to manifest themselves. Its use by itself appears to be comparatively on the decrease, but as a corrective or adjuvant it is largely employed. One part of caffein to three of antipyrin forms quite an effective combination for neuralgias, etc. A mixture of

Antipyrin	.	.	.	.	.	.	.	5 parts
Phenacetin	.	.	.	.	.	.	.	2 "
Acetanilid	.	.	.	.	.	.	.	1 part

divided into sixteen cachets is successfully used by Dr. C. Bozzolo, of Turin, Italy, and Drs. Berger and Vogt, of Paris, France, to heighten antipyretic, analgesic, and hypnotic, and lessen toxic, effects.

To lower the temperature in measles, Dr. Leprévost, of France, has apparently made good use of antipyrin, and reports on 47 cases, with the following conclusions:

"1. Antipyrin is well tolerated by children. 2. It produces prompt lowering of the temperature, not always to a very great extent, but with certainty in the immense majority of cases. 3. The maximum of the fall of temperature is obtained at the end of two hours in most cases. It is frequently maintained for twelve hours, and may persist for thirty-six. 4. Antipyrin seems to act in cases in which simple baths, or those to which mustard has been added, and moist applications, have failed. In all cases, if the immediate antithermic effects were not more intense, they were more lasting. 5. It has no action on the classic thermic cycle of measles or on any of its complications. 6. The most varied complications have no influence at all on the results obtained with the antipyrin,

and the failure of the drug should not be imputed to them. 7. No antithermic reaction, or a very feeble one, is often an unfavourable element in the prognosis. This rule is not absolute, and, as recovery may supervene in a case in which there has been no reaction, so may death occur with an abnormally high or an abnormally low temperature in patients who previously showed a notable lowering of the temperature. 8. Antipyrin has no action at all on the rapidity of the pulse. 9. It seems to ameliorate dyspnoea in a slight degree. This action does not often begin until two hours after the indigestion of the drug.”<sup>1</sup>

It has been employed with good effect by Rousseau of Bordeaux, France, in infantile diarrhoeas and colic, especially when teething. He now reports on 500 of his hospital cases with most gratifying results. He uses

Antipyrin	.	.	.	.	.	.	.	1 part
Syrup	.	.	.	.	.	.	.	100 parts
Water	.	.	.	.	.	.	.	100 “

in teaspoonful doses every two hours just before nursing.

Dr. Frederick Graves, L. R. C. P., of Birmingham, England, reports a case of successful treatment of diabetes mellitus with antipyrin, as an adjuvant at the stage called for. Six hundred and fifty milligrammes (10 grains) were administered thrice daily for three days, showing marked improvement, and “the temperature became normal, the quantity of urine came down steadily, and the glucose decreased. On the twelfth day the patient complained only of slight weakness and thirst. She was passing barely 100 ounces of water, and only 10 grains sugar per ounce. In a month’s time the glucose was only about  $1\frac{1}{2}$  to 2 grains per ounce. When last heard of, the symptoms had nearly disappeared with care in diet, and the urine was moderate in amount.

“The case presents remarkable features of interest: the sudden onset, the maniacal raving, the uraemic nature of the epileptoid attacks, the presence of acetone, and the improvement and subsequent reduction of glucose from the urine on the continued administration of antipyrin.”<sup>2</sup>

Professor Savitzky, of Russia, now reports the results of his seventeen years’ observations with enemata of antipyrin as an obstetrical anaesthetic. He employs 1 gramme (15.4 grains) every two to six hours (at times in combination with 15 to 20 drops of

<sup>1</sup> N. Y. Med. Journ. vol. lxiii, p. 192.

<sup>2</sup> Brit. Med. Journ., vol. i for 1896, p. 970.

Russian tincture of opium, which is 1 part of opium to 10 of tincture). The pain appears to be relieved in from fifteen to twenty minutes, and the haemorrhage perceptibly diminished. No bad after-effects were ever noticed.

Dr. Pousson, of Bordeaux, France, reports using a 2 to 4 per cent. solution of antipyrin as an efficient anaesthetic for the bladder. He claims it is as effective as cocaine, and besides is absolutely free from toxic properties.

Dr. Merklen reported at a meeting of the Paris Medical Society of the Hospitals, on December 20, last, his successful use of antipyrin in two additional cases of laryngeal vertigo. His doses were from 2 to 3 grammes (30.9 to 46.3 grains) daily. He had previously reported one other case. In chronic laryngitis accompanying the spasm he used a spray of antipyrin solution.

Dr. Roswell Park, of Buffalo, N. Y., also reports his past successful use in his surgical practice of a 5 per cent. spray on any surface. He has used it also in the urethra, bladder, and even in the eye. In this connection he calls attention to a combination of antipyrin and tannic acid in solution as a styptic. Those interested in this apparently effective combination will do well to read Dr. Park's "Some Therapeutical (Surgical) Notes."<sup>1</sup>

Dr. A. E. Anderson has made good use of a 10 per cent. solution in acute, chronic, and granular conjunctivitis. There is first a sensation of pain, but this soon disappears.

*Antitoxin* has received unabated attention throughout the year, and much valuable work has been accomplished; but taking the testimony of the profession throughout the medical world the results are still conflicting, and it cannot yet be concluded that a specific agent has been found. So many conflicting factors are present in quite a proportion of the cases treated that an undue anxiety to accomplish successful results tends to bias the observer's conclusions towards his favoured agent. No doubt the larger proportion of the medical profession of this country are fairly familiar with what has been accomplished during the year by observers on this side of the Atlantic; therefore it may be of more interest to consider here some of the foreign literature. The editor of the *British Medical Journal* gives the following, which may be of historical interest:

"The question, Who was the originator of the serum treatment of disease? has been raised recently. It is always a little difficult to speak with certainty on a point of priority of this kind, for new

<sup>1</sup> Medical News, vol. lxvii, p. 547.

ideas seldom spring entirely from one man, but we believe that the method had its origin from the observation made in 1887 by Von Fodor that blood when drawn from the body had a distinct bactericidal action. Nuttall and others then pointed out that although this bacteriological action might be connected with the corpuscles of the blood it was not confined to them, as the serum of freshly coagulated blood was found to contain some proteid substance which undoubtedly exerted a powerful bactericidal effect. In July, 1889, Babes and Lepp recorded a number of experiments in which they had found that the blood of dogs, which had been vaccinated against rabies, exerted a distinctly protective action when injected into susceptible animals, either previous to, or along with, the virus procured from a rabid animal. Ferran appears to have been the next observer to accentuate this point. He was followed by Bouchard in France, whilst Behring and Kitasato in Germany, and then Roux in Paris, and others in rapid succession, pointed out that there was in the serum of the blood of animals vaccinated against diphtheria and tetanus a distinct prophylactic curative agent which, however, it was difficult to separate from the serum. In 1891 patients were treated in Berlin with serum prepared by Behring. The work was then taken up in Germany and France, and at the present time the preparation of this serum has been commenced in almost every country in Europe " as well as in the United States.

In England a "joint report of the medical superintendents of the hospitals of the Metropolitan Asylums Board was issued on March 28. It contains the statistics of the cases of diphtheria treated in 1895, during the whole of which diphtheria antitoxic serum was used. The serum used during the first eight months was supplied by the British Institute of Preventive Medicine, and for the following four months by Dr. Sims Woodhead, in accordance with the arrangement made with the Committee of the Laboratories of the Royal Colleges. For purposes of comparison the statistics of 1894 have been selected because it was the year preceding the general use of antitoxin, and because the average severity of the cases in the two years was about equal. A small number of cases were treated with antitoxin during 1894, but for the purposes of comparison these were excluded. Not all the cases of diphtheria admitted in 1895 were treated with antitoxin, but as a rule it was not used for the less severe cases.



## GENERAL RESULTS.

"The results obtained in 1895 were distinctly better than in 1894. The superintendents state that the improved results, as shown by the statistics and by clinical observation, were manifested in the following respects :

"1. A great reduction in the mortality of cases brought under treatment on the first and second day of illness.

"2. The lowering of the combined general mortality to a point below that of any former year.

"3. The still more remarkable reduction in the mortality of the laryngeal cases.

"4. The uniform improvement in the results of tracheotomy at each separate hospital.

"5. The beneficial effect produced on the clinical course of the disease.

"The cases treated in 1894, before the use of antitoxin, numbered 3,042, and the deaths 902, or 29.6 per cent. The cases treated with antitoxin in 1895 numbered 2,182, and the deaths 615, or 28.1 per cent. But from these figures were excluded a large proportion of the less severe cases, so that to obtain a fair comparison all the cases for 1895 must be taken, both those treated by antitoxin (including nearly all the severe cases) and those not treated by antitoxin, including most of the less severe. We then find that the number of cases was 3,529, with 796 deaths, or 22.5 per cent. as compared with a mortality of 29.6 in 1894." . . .

"The report, which is an extremely full and impartial document, concludes with the following statement: 'We are of the opinion that in antitoxic serum we possess a remedy of distinctly greater value in the treatment of diphtheria than any other with which we are acquainted.'"

The editor of the *British Medical Journal* comments on this report as follows :

"This report will long serve as the standard by which future results in the antitoxic treatment will be measured ; it is, therefore, obviously necessary to consider some of the reasons why the general results, though in themselves favourable, are not equal to those obtained abroad. In a series of most elaborate tables, which must have involved an enormous amount of work, the general results obtained in individual hospitals, and in the whole of the hospitals under the management of the board, are given ; but it is

<sup>1</sup> *British Medical Journal*, vol. i for 1896, p. 855.

somewhat unfortunate that the information to be gathered from these tables, from the irregular manner in which the remedy has been employed, is not at all commensurate with the amount of labour that has been expended in drawing them up. However, the public will be able to draw the general conclusion that the use of antitoxin has lowered the percentage of diphtheria mortality in the hospitals under the board from 29.6, the lowest previously reached (1894), to 22.5 (1895), or a saving of 7.1 lives in every 100 cases. The mortality has been reduced only one quarter, whilst from the recent statistics published in France and Germany, the diphtheria mortality in these countries has been reduced about two thirds, or more than twice as much as in London. Why has the remedy been so much less effective in London than in other large cities on the Continent and in America?

“In this connection it is perhaps well to consider in the first instance the manner in which the antitoxin has been administered. Careful tables are given of the day of the disease on which the antitoxin has been first administered, but in no case is it stated how long the patient had been in the hospital when this first dose was given; and this taken in conjunction with the fact that it is expressly stated that the antitoxin was given only in the more severe cases will raise the doubt in the minds of many that some cases at least, mild when first admitted, only afterwards became grave enough to be considered suitable for treatment with the antitoxic serum. Of the whole of the cases that were brought into hospital, only 61.8 per cent. received injections of antitoxic serum, and these were said to be mostly cases of greater severity than those which were treated by the ordinary method. The whole of the mortality, therefore (with the exception of those cases that were not injected because they were moribund on admission), unless the milder cases afterwards became severe in the hospital, should be drawn from amongst these cases, and any deaths occurring beyond these must be amongst those undergoing the ordinary (non-serum) treatment after admission to the hospital. It is evident, therefore, that the death-rate should have been similar to that which occurred abroad; but this is not the case. If there is one point that has been more insisted upon than another, it is that the date at which antitoxic serum is introduced is a matter of prime importance; indeed, everything goes to show that when a case is taken in time it may, by the use of antitoxin, be cured with almost absolute certainty. This point indeed is brought out with the utmost clearness in the statistics now under consideration, for we

find that of cases treated with antitoxic serum on the first day, the mortality per cent. is only 4.6, whilst of those treated on the fifth day and after, 35.7 per cent. die. This point is even more definitely brought out in the supplementary report by Dr. Hume of the Convalescent (Northern) Hospital, who had the opportunity of treating a number of cases of post-scarlatinal diphtheria at an early stage of the disease; he also, however, treated only the more severe cases; but amongst these we find that of those injected on the first day not a single one died, while amongst the whole 119 cases there were only four deaths, giving the extraordinary low mortality of 3.3 per cent. as compared with an average mortality on the last three years of 63 per cent. It would be interesting to know what results have been obtained in similar cases of post-scarlatinal diphtheria occurring in other hospitals under the board, in which antitoxic serum has not been used.

"In the statistics the average dose of serum per patient is stated, but no indication is given of the time at which the doses were repeated, and what relation such dose bore to the severity of the case and to the period of its duration. At a very early period Behring pointed out that taking the amount of antitoxic serum necessary to neutralise a given quantity of toxin when given within a quarter of an hour after the toxin had been injected as 1, it would take ten times this amount to produce the same effect if it were not given until eight hours after the poison had been injected, whilst 100 times as much may be necessary if the injection is delayed twenty-four hours.

"It is evident, therefore, that the dose which might be sufficient when given early in a post-scarlatinal case would be practically useless in those cases which were treated on the third day or later, and that if the same dose were repeated on the following day its effect would probably be only a small fraction of what it would have been had it been injected at the earlier period. It cannot, apparently, be too strongly insisted upon that the number of units considered necessary for the treatment of any case should, if possible, be introduced in a single dose, or at any rate, as rapidly as is practicable. It is only by the intelligent use of antitoxin on principles which have been established by experiments on animals and by clinical experience, that the best results can be expected, for it is at once apparent that, guided by these considerations, the amount of serum injected in the later stages of an attack of diphtheria must be many times greater than would suffice at the earlier periods of the disease. We are, however, unable to draw any information

from the report which would justify us in concluding that the reporters were guided in their treatment by these principles; indeed, that this point has been to a great extent ignored is evident from the fact that they state that, in their opinion, 'the best results may be obtained by giving a dose of 1,000 Behring's immunisation units every twelve hours for the first twenty-four, thirty-six, or forty-eight hours, according to the gravity of the case, and, if necessary, a subsequent injection of half the amount daily for such time as the exudation may remain adherent.' If Behring's deductions from his experiments are correct, it must be concluded that the efficacy of these thousands of units would have been immensely increased had they been introduced at the earliest possible stage of the disease instead of being spread over the course of the attack.

"It will strike even the casual observer that the omission of comparative statistics from hospitals where the ordinary treatment only was employed for certain periods, or where all cases were for periods treated with antitoxin, prevents us from making a direct comparison between the two modes of treatment, and allows us only to draw that general conclusion as regards the reduction of the total mortality to which reference has above been made. As it is stated in the report that the serum was not used at certain periods in one of the hospitals, the cases treated during these periods would have afforded an admirable control for the results obtained in other hospitals where the serum treatment was at that time in operation; unfortunately, however, no data are given on this point, and the absence of such complete controls is one of the weakest features in the report, and has certainly laid the results of the treatment open to unfavourable comment by uninformed leaders of opinion in the lay press.

"It is very satisfactory to find that even those of the medical superintendents who have hitherto been doubtful about, or adverse to, the antitoxic treatment are now so far convinced of its efficacy that they are able to state that, in their opinion, 'in antitoxic serum we possess a remedy of distinctly greater value in the treatment of diphtheria than any other with which we are acquainted.'

"This opinion and the results upon which it is based will, it must be hoped, increase the confidence of the medical profession in this country in the value of the serum treatment of diphtheria, and lead shortly to as extended a use of the remedy as already obtains on the Continent; whilst, now that all those in charge of the hospitals have recognised this value, it may be anticipated



that, with a more thorough application of the remedy in all cases brought in for treatment, much better results will have to be recorded in the next yearly report."<sup>1</sup>

As might be expected, the report received some adverse criticism, of which the following is a sample:

Mr. Demetrius C. Boulger published in the *Daily News* "a statement in which he challenges the accuracy of the statistics and conclusions contained in the recently published report of the Metropolitan Asylums Board, with respect to the effects of diphtheria antitoxin. He disputes the main conclusion that, because the gross death-rate for the year 1895 was 22.5 per cent. as against 29.6 per cent. in the year 1894, 'in antitoxic serum we possess a remedy of distinctly greater value in the treatment of diphtheria than any other with which we are acquainted.' It appears that the first nine months of the year 1895 were exceptionally light ones for diphtheria, with a very low total of deaths, whereas the last three months were as clearly marked by the excessive prevalence of the disease and by a high total of deaths. Mr. Boulger resolved, therefore, to ascertain how far the results at one hospital for the last quarter of the year accord with those published for the whole year. The figures given were the complete returns from October 1 to December 31, 1895, and were taken from the bed cards of the patients. There were in all 193 cases of diphtheria. 'Of these, fifty-eight received antitoxin, with the result that thirty-four died, giving the appalling death-rate of 58.6 per cent. Of the other 135, who did not receive antitoxin, only twenty died, or a death-rate of 14.8 per cent. The rates for the year in the hospitals were 28.6 for antitoxined cases, and 13.4 for non-antitoxined cases, so that in this fatal quarter the antitoxined cases were 30 per cent. higher than on the whole year, and the non-antitoxined cases only 1.4 per cent.'"

The London *Lancet* appointed a special commission on the Relative Strengths of Diphtheria Antitoxic Serums, which has now reported. The *Lancet* comments on this report as follows:

"The justification for such an inquiry is stated in the opening paragraphs, which lay stress on the admitted fact that the results obtained in this country from the antitoxin treatment of diphtheria have been less striking than those gained upon the continent, whilst a too frequent failure of the novel remedy to avert the progress of the disease has in some quarters engendered a distrust of its efficacy and a doubt as to the correctness of the interpretation

placed on the results of Behring's researches. Doubtless many things have contributed towards this impression; but that which has been mainly operative is the simple fact of insufficient dosage, and if a study of the careful and exhaustive report furnished by our commissioners does nothing else than bring this fact home to the minds of the profession, their labours will not have been in vain, for the principle underlying the use of antitoxic serum is so firmly established on scientific grounds that it seems almost impossible for failure to arise; and it would be worse than folly to dismiss without further inquiry a remedy which has been accredited by tests far more crucial than are commonly available, because in the hands of some it has yielded only disappointment. When we recall the nature of diphtheria and its deadly influence upon the body, and when we find good ground for the belief that in Behring's serum we possess the means of neutralising this potent virus, we are bound to employ that remedy, and if it fail we are equally bound to know the reason why. The timely administration of an antidote may rescue a man from the certain death that would follow if the dose of poison he has taken were allowed to remain in his system without interference; but if the amount of the antidote be insufficient to neutralise the poison, death may occur in spite of the administration of the remedy. The parallel with diphtheria is almost exact. In that disease, we have produced by the agency of the bacillus a virus or toxin which, if left unneutralised, might produce the direst effects. The fact, so strikingly exemplified in the experiments related by our commissioners, that the longer the delay in having resort to antitoxin the larger the dose required to neutralise the poison, is one which harmonises well with our conception of the nature of the disease and the theory of antitoxin. It gives, further, a satisfactory reason why one sample of serum may produce marked benefit when employed in one case within a few hours of the diphtherial infection, whilst it may be almost without effect in another case where its administration has been delayed. Now since, as is clearly proved, the potency of the various kinds of serum procured in this country is comparatively small, and since, too, it is remembered that resort to its use has often been restricted to the severe cases and as a last resource, there can be no surprise at many of the results being negative. The fact is, the profession in this country have hardly had the facility for giving the antitoxin treatment a fair trial; and those who have been most urgent for authoritative conclusions to be arrived at should be reminded that the time has not yet come for a really just judg-

ment. Hitherto the administration has been more or less haphazard, and the quantity of serum injected has been thought to represent its antitoxic value; but a glance at the data given by our commissioners will prove to demonstrate that there is no relation between the two, and further, that the quality of the serum is most variable. . . .

“In view of these considerations, it is most essential that provision should be made for having the samples of serum in the market tested periodically and standardised. There should be some uniform method of testing employed, and that of Ehrlich and Behring seems to be the most reliable; and it should be done by an independent central authority. The German government, which in all these matters is so far ahead of that of any other country, has already established such a central authority. Then, too, it may be advisable to limit the sources of supply. We do not advocate a monopoly even in antitoxin; but having regard to the nature of this remedy, to the liability of an organic fluid to become contaminated, and the importance of each sample of serum being up to a standard minimum of antitoxic potency (our commissioners suggest that this should not be less than 60 normal units per c.c.), it is obvious that the more limited the sources of supply, the less the liability to defects. Especially would we urge the rejection of any samples that show evidence of contamination. Everything goes to show that the ‘antitoxin’ itself is free from any effect on the body, no matter in what amount it is administered. Its beneficent action is to protect from the virulence of the toxin; but the serum that contains it may harbour less benign elements, and it is quite conceivable that many of the ‘*Nebenwirkungen*’—i. e., accidental rather than essential qualities—of the serum are due to adulteration and not to remedial principle.”<sup>1</sup>

Prof. Pio Foà, of Turin, Italy, reported at a meeting of the Congress of the Italian Society of Internal Medicine, held in Rome in October last, that this mode of treatment has proved less efficacious in acute cases of tetanus, assuming that under such conditions its manifestations were due to existing severe organic lesions on which no effect ought to be expected. As a prophylactic measure, however, it has given excellent results.

“Professor Benmer and Professor Peiper, of Greifswald, Prussia, have produced an antitoxin for enteric fever from the sheep, after the method used by Professor Behring for his diphtheria antitoxin. The experiments are not yet finished and particulars are

<sup>1</sup> The London Lancet, vol. ii for 1896, p.196.

not published; but Dr. Borger, assistant physician to the medical clinic of the University of Greifswald, has issued a preliminary notice, giving an account of the results hitherto obtained. Twelve patients were treated by the antitoxin; in the first cases, from twenty to thirty grammes (from three quarters of an ounce to an ounce) were injected; but as no effect was produced, the amount used on the next occasion was from fifty-five to two hundred grammes (from two ounces to seven ounces). All the patients were in a somewhat advanced stage of the illness, namely, from the seventh to the sixteenth day. When the antitoxin was used on the tenth day and later, no effect was observable. In one case, the treatment was begun at a relatively early period, namely, on the eighth day, and the very large dose of two hundred grammes (= seven ounces) was employed, but death nevertheless ensued. In another case, one hundred and fifty grammes (= five and a half ounces) were given, but the patient had a serious relapse, lasting from the twenty-eighth till the forty-second day. Only four of the remaining cases showed a satisfactory result, the fever having ceased on the eleventh, seventeenth, and eighteenth days respectively. In some instances a second injection was performed. These results are not very encouraging; no injurious effects were perceptible, but the antitoxin must be greatly improved to become really useful. The principal requirements, however, are that the clinical and bacteriological diagnosis of enteric fever should be made at an earlier period than is practicable just now, and that patients should come into the hospitals before their illness is far advanced."<sup>1</sup>

Drs. Metchnikoff, E. Roux, and Salinobani, of the Pasteur Institute at Lille, France, are now engaged in researches for a cholera antitoxin. The serum they are now using has given promising results when injected into young rabbits previously inoculated with cholera. Further experiments are yet needed before any decided results can be reported.

Professors Tizzoni and Cattani, of Italy, are reported to be carrying on a very careful series of experiments in relation to rabies. Nothing very striking has yet been produced.

Dr. Selavo, of Rome, Italy, has carried out numerous experiments with the idea of discovering an anthrax antitoxin. He has made use of goats and rabbits with a certain degree of success, but prefers to continue much further before making known his results. He feels justified, however, in recommending the serum he is now

<sup>1</sup> The London Lancet, vol. i for 1896, p. 742.



using at once in the human subject, and offers to gladly supply clinicians with the serum he has prepared.

“Among the most important papers read at the Carlisle meeting of the British Medical Association, in July last, were those of Professors T. R. Fraser, of Edinburgh, Scotland, and A. Calmette, of the Pasteur Institute, on their further researches into the interesting subject of the serum treatment of snake bite. Each was confined to a plain and lucid account of facts observed, and avoided completely all controversial matter. Professor Calmette commenced by insisting on the remarkable fact that the physiological effects of the poisons secreted by different species of snakes are identical; the individual variations in action are local, and result from the presence of albuminoid substances which can be removed by heating the aqueous solution of the venom to 85° C. for fifteen minutes, a process which leaves the toxins unaffected. The degree of toxicity depends, of course, upon the snake, and can be considerably diminished by filtering through a Chamberland’s bougie, in the pores of which the albuminoids stick and hold much of the toxins. The serum of animals vaccinated against a very virulent venom, such as that of the cobra, is perfectly antitoxic to the poisons of all kinds of serpents, and even of scorpions. Dr. Calmette’s method of preparing antivenomous serum consists in injecting horses with increasing doses of cobra venom mixed with decreasing quantities of a weak solution of calcium hypochlorite, which limits its toxic action; the animal being immunised, is then injected with the poisons of as many different kinds of snakes as possible, the whole process lasting about fifteen months. The paper, after recounting two successful cases of the use of antivenene, called upon the government of India, where more than 22,000 people die annually from snake bites, to take up the question seriously by providing central depots for the serum, to which specially convenient means of transit should be afforded. Professor Fraser took up the subject from another point of view. The first object of his paper was to illustrate the limitations to the antidotal power of antitoxins by details as to the antagonism between antivenene and serpent’s venom. He had found that the amount of antivenene required to antagonise the effect of a minimum lethal dose of poison injected half an hour before was 1,600 times that which sufficed to antagonise the same amount when mixed *in vitro*. The results of test-tube experiments cannot, therefore, be taken in estimating antitoxicity. Professor Fraser also stated that he had succeeded in immunising animals against venom by caus-

ing them to swallow it in increasing doses. He considered that the antitoxic power of antivenene depended upon the formation of a chemical substance, probably derived from the remedy, in the blood. Professor Calmette subjected almost every conclusion in this paper to courteous but severe criticism. He considered that Professor Fraser standardised his serum in much too dilute a condition, and stated that he himself used for standardising purposes at least ten times the minimum lethal dose. He had never obtained immunity by feeding animals on venom; and if this method were sound it would be impracticable, owing to the large quantities of venom required. He also adduced striking experiments to show that the action of antivenene depended not on the formation of a chemical substance, but on rapid diminution of the susceptibility of the cells of the organism to the poison. Thus, if a ten times mortal dose of venom be mixed with enough serum to antagonise it, and the mixture heated to 80° degrees for five minutes and then injected into an animal, death follows rapidly, showing that the antagonism cannot be due to the formation of a chemical product. Professor Fraser was unfortunately not present to support his paper; but it will be interesting to see if he can bring forward evidence to rebut the strictures of the Lille professor. In any case, the papers show that the subject has during the last year passed from being a mere scientific curiosity to become a practical and valuable means in the preservation of human life. For this the world is indebted to the two eminent investigators whose labours they record, and all minor differences as to priority have passed into oblivion in face of the far greater issues now at stake.”<sup>1</sup>

Professor Weiss has recently treated ten cases with the serum obtained from patients who had just passed through an attack of rheumatic fever. No specific curative action could be proved, although in some cases after two or three injections an unusually short recovery was noticed. Six to ten grammes (92.6 to 154.3 grains) of the serum on an average was used. With so few cases, no conclusions can be drawn; but even in cases where a beneficial effect was obtained, the inflammatory symptoms reappeared later.

During the past year, Dr. De Renzi has treated ten cases of pneumonia with antipneumonic serum prepared in a way recommended by himself. Only severe cases were selected for treatment. In all of the ten cases he reports a “cure.” Although he admits that these cases might have recovered without the serum

<sup>1</sup> British Medical Journal, vol. ii for 1896, p. 345.

treatment, Dr. De Renzi considers his results decidedly encouraging, for they point directly towards a real and effective treatment of this affection.

Although the specific organism causing scarlet fever is yet to be determined, Dr. Marmorek with others recognised the frequent presence of a streptococcus in this disease. He thus obtained some interesting results of value by injecting antistreptococcus serum in ninety-six cases of scarlet fever in his hospital practice. Five of these died—four from diphtheria and one from pneumonia. The most marked effect was noticed in the rapid subsidence of the swollen glands, which was so pronounced that there was no suppuration in any of the cases. The injection not only appeared to prevent serious complications, but promoted the rapid disappearance of false membranes from the throat as well as causing the delirium to subside. The only disagreeable effects noted were the temporary erythemata. Dr. Marmorek admits that the series of cases is too small to warrant a too general conclusion; still he is still convinced that this treatment had the very gratifying effect of reducing the severity of the attacks.

Dr. Marmorek's anti-streptococcic serum has been used by Professor Gaulard in two cases of puerpural fever with not altogether satisfactory results. In the first case the patient made a good recovery, but in the second case death occurred, which was at least hastened by an uncontrollable vomiting—due, according to Dr. Gaulard, to an overdose of the serum, for there was no indication of any peritonitis or suppuration.

Professor Neumann has been carrying on a series of investigations on the treatment of syphilis by the serum of animals immune to this affection, but with results far from being satisfactory. The ordinary methods will show the best results. He pleads that the number of his cases was too few to condemn the method, especially as other "syphilographers" have met with some success; therefore he would recommend a continuance of the experiments.

Dr. Carrasquilla has been experimenting with anti-leprous serum. He does not relate his mode of preparation, but he simply reports his successful use of it in 15 cases of nerve leprosy—the latest 3 being the tubercular form. In none of his 15 cases has any further action of the bacillus manifested itself after the first injection. He concludes that this treatment is successful in proportion to the severity of the peripheral nerve lesion, and that the mental as well as physical condition is much improved.

*Apolysin*—the combination of phenetidin and citric acid—has received some attention during the past year. Drs. H. Hildebrandt and A. Seifert seem to have confirmed Drs. de Nencki's and de Javorski's results.

In this country Dr. Louis Fischer, of New York, has tested its value in a series of 38 cases of children suffering from high fever in various diseases—as cerebral pneumonia, typhoid fever, rheumatism, measles, and others. In his report, which takes the form of a paper on "The Treatment of Hyperpyrexia (High Fever) in Children, with some Illustrative cases,"<sup>1</sup> he gives the details of 8 typical cases. "Not one single case showed disagreeable effects from this drug, and it was very well tolerated by weak stomachs, such, for example, as those of children who have been brought up on almost a starvation diet, with bad hygienic surroundings, with alcoholic parents, and in some instances in our ordinary tenement houses."

In Professor Neusser's clinic in Vienna 50 patients suffering from pneumonia, migraine, rheumatism, pleurisy, typhoid fever, and neuralgia, were treated with this agent and previous views were confirmed as to its innocuousness, lack of ill effects and toleration of the fasting stomach to such doses as 2 grammes (about 30 grains). The antipyretic effect was, however, very slow and slight, and in some cases it seemed to aggravate the pain. The conclusion is therefore drawn that it is an indifferent pharmaceutical product, possessing no analgesic and but little antipyretic and diuretic properties.

Again, in this country, Dr. David Cerna, of Texas, has published "A Note on the Action of Apolysin."<sup>2</sup> He carried on a series of four experiments on dogs, and concludes as follows:

"But be all this as it may, and although fully agreeing with the statements of the authors referred to, as to the innocuousness of apolysin even when ingested in large amounts, and notwithstanding the assertion that the drug is usually reluctant to part with the phenetidin which it contains, care, I believe, should be exercised in the administration of apolysin. It is true, no case of poisoning by this agent in man has been reported as yet, and although Nencki and Javorski, Seifert and Hildebrandt have observed no lethal effects, I myself have seen not only bad results but death also in the lower animals following the ingestion of apolysin. The results of Experiment 4 are here recalled. In this

<sup>1</sup>Med. Record, vol. lxi., p. 253.

<sup>2</sup>Journ. Amer. Med. Assoc., vol. xxvi., p. 1219.



experiment intravenous injections of the new medicament finally caused death by a simultaneous cardiac and respiratory paralysis, the fatal issue being preceded by considerable hematuria, cyanosis and marked symptoms of asphyxia, changes, be it remembered, similar to those produced by para-amido-phenol and those caused by para-phenetidin. Therefore, while I do not consider apolysin a toxic agent in ordinary therapeutic and even larger doses, I must certainly caution against its injudicious administration as a routine practice in all those cases calling for antipyretic and analgesic remedies. Apolysin may be given to adults in single doses varying from 1 to 2 grammes (about 15 to 30 grains) by the mouth; to children in proportionate amounts according to age."

*Argentamin* (ethylene-diamin-silver phosphate)—the silver nitrate substitute—has been little heard of during the past year, but it is still extolled by some as having all the advantages and none of the disadvantages of silver nitrate, especially in eye affections. However, its irritating effects are greater than

*Argonin*, the bactericide formed by mixing silver nitrate with a combination of sodium and casein—thus forming a silver preparation of undetermined composition—has been comparatively little reported on during the past year, but all who have reported have apparently confirmed previous observations. Three additional observers confirm the statements of those of last year in that this agent appears to be one of the most rapid and sure of any yet known in the treatment of gonorrhea. Fifty-four cases were treated by Dr. Bender with a 7.5 per cent. solution in water, of which 10 grammes (154 grains) were injected into the urethra three or four times a day. In 12 of these cases which were acute, the gonococci disappeared in less than one week. The longest duration before a successful result was reached was six weeks. Dr. A. Lewin concludes, after his trials, that it is especially useful in treating the early stages of gonorrhea, on account of the absence of irritating effects.

Dr. Geo. K. Swinburne, of New York, has made a preliminary report of his experience with it in the acute stages of gonorrhea. His observations are based on the treatment of 50 cases of acute gonorrhea in the early stages of a first attack, and in 12 cases of chronic urethritis, which would not respond to other treatment. He began at first with a 2 per cent. solution, gradually increasing to 10 per cent., but after a few trials, finding that there were no inflammatory reactions and no pain produced, he employed the full strength in all the remaining cases. It was gratifying to note

that the patients uniformly declared that the injections only caused a slight temporary burning sensation. On account of the short time in which he has made use of this agent, Dr. Swinburne is not able to report on the liability to relapses.

*Aristol* (annidalin) is now well established both in this and the old country in surgical practice. It continues to be dusted on ulcers, burns, etc., as heretofore, but its uses as an adjuvant or corrective as well are on the increase. Dr. Eriberto Aievoli has had very successful results with a 4 to 10 per cent. ointment spread on sterilized gauze in 50 cases of suppurating wounds, varicose ulcers, suppurative adenitis, chilblains and boils. In most injuries about the head, the results are very favourable and remarkably prompt, but in varicose ulcers of the feet they were not so successful, as he could not keep the patients from walking. In ulcerating chilblains and burns he was very much gratified with his results. He points out one particularly great advantage in these dressings in that they are removed so readily. He classes *aristol* above boric acid in therapeutic efficiency.

Dr. Haas recommends the following ointment:

<i>Aristol</i>	.	.	.	10 grammes (about 150 grains)
Olive oil	.	.	.	20 " ( " 300 " )
Vaselin	.	.	.	40 " ( " 600 " )
Lanolin	.	.	.	40 " ( " 600 " )

Dr. Paul Walton, of Ghent, Belgium, reports using about the same ointment as a routine practice in his service in the Hôpital Civil of his city in the treatment of extensive burns. His formula is:

<i>Aristol</i>	.	.	.	.	.	.	.	1 part
Sterilized olive oil	.	.	.	.	.	.	.	2 parts
Vaselin	.	.	.	.	.	.	.	8 "

Around the edges of the burns after the ointment is spread, he dusts the *aristol* in powder form. In burns, local in extent, he employs the powder form only, and has done so for a year past with very gratifying results. He lays great stress on cleanliness, which must be thorough whenever the dressing is changed. One of its great advantages is its freedom from poisonous effects. He calls attention to the smarting, which takes place at first, but soon passes off.

*Asaprol* (calcium  $\beta$ -naphthol- $\alpha$ -mono-sulphonate), the agent which has been previously extolled over antipyrin and quinine, has been practically unheard of during the past year.

*Benzacetin* is the name adopted for the compound aceto-amido-methyl salicylate, and was recommended about a year or two ago in the treatment of neuralgia by an observer in the old country. It occurs in colourless crystals melting at 205° C. (401° F.) and sparingly soluble in water. The dose varies from 500 milligrammes (about 8 grains) to 1 gramme (about 15 grains). Very meagre reports have been made upon it up to this time, but now one comes from trials made in the treatment of various forms of neuralgia in a German lunatic asylum at Stephansfeld. It is given in the following combination:

Benzacetin . . . . .	85.8 parts
Caffein . . . . .	8.5 “
Citric acid . . . . .	5.7 “
	<hr/>
	100.0 “

in doses 1 to 2 grammes (15.4 to 30.9 grains) of the combination, and repeated in one hour if relief is not obtained. The general results were satisfactory, as the pain was generally alleviated inside of three hours, and did not return for several days. No direct hypnotic effect can apparently be accredited to this agent.

*Benzanilid*, the close ally of acetanilid, has not been heard of in the medical literature of the year.

*Benzonaphtol* ( $\beta$ -naphtol benzoate) has not been as prominently reported upon this year as even last year, and it may be concluded that the results may not have been as favourable as wished for, although it has been much used. As might be expected from previous reports, its best results come from its use as an intestinal antiseptic, especially in children. In a comparative experimental study of several antiseptics in infantile diarrhoeas, made by Dr. J. A. Haywood and Mr. Buttar, reported at a meeting of the Royal Medical and Chirurgical Society of London, England, on March 24th last, this agent was accorded a rather subordinate position, as giving unsatisfactory results, although clinical data were apparently wanting, for the reason that test-tube experiments were so unsatisfactory. From the discussion which followed, it might very naturally be inferred that change of food and surroundings, with very general hygienic precautions, were in most cases the controlling elements in almost immediate improvement. This conclusion also can reasonably be reached from the report made by Dr. S. Solis-Cohen, of Philadelphia, Penn., in one of his “Therapeutic Talks,” in the Philadelphia Polyclinic Hospital, recently,

on "The Use of Benzonaphtol with Bismuth Salicylate in the Treatment of the Summer Diarrhoeas of Young Children."<sup>1</sup> He concludes: "To sum up, then, the proper line of treatment is rest, fresh air, cool bathing or sponging, cleansing of the alimentary tract, intermission of food liable to decomposition or fermentation, the administration of cool water and barley-water in small quantities, the water having been boiled and filtered when necessary, and medicinally the use of a sedative and antiseptic mixture, for which purpose benzonaphtol and bismuth salicylate, with or without opium, are of great use. In cases of severity, approaching collapse, hot bathing, external application of heat, and the use of strychnine in appropriate doses, may be additionally necessary."

Dr. José E. Ferran proposes the use of this agent as an anthelmintic for children in the following formula:

Benzonaphtol	.	.	.	.	2 grammes (30.9 grains)
Santonica	.	.	.	.	1 " (15.4 " )
Sugar	.	.	.	.	5 " (77.2 " )

He divides into 20 powders and gives from two to five of these throughout each day. After the dislodgment and discharge of the worm, he continues the use of the benzonaphtol, either alone or with magnesia, for about four weeks.

*Benzosol* (Benzoyl guaiacol) has been reported upon somewhat more frequently during the past year, although some of the observers appear to imagine it is of recent introduction, but they have evidently failed to look up the literature of the subject, for it has been before the medical profession as far back as 1892, at least. Year before last allusion was made here to the fact that Professor Palma, of Berlin, had refuted the favourable results of Drs. B. von Jaksch and Marian Piatkowski in the treatment of diabetes mellitus reported the year previous to that. Nothing of importance has been reported since up to last October, when Dr. J. Blake White, of this Association, read a paper here on "A Contribution to the Therapeutics of Diabetes,"<sup>2</sup> in which he confirms the results of Drs. von Jaksch and Piatkowski. Dr. White concludes as follows:

"The dose, gradually increased from one or more grains to fifteen grains daily, occasions no disagreeable effects; but it is apt to excite diarrhoea if carried up to one drachm daily. I have been in the habit of prescribing the remedy in capsules, commencing with

<sup>1</sup>Med. News, vol. lxi, p. 203.

<sup>2</sup>Trans. N. Y. State Med. Assoc., vol. xii, p. 430.



a moderate dose of a grain or two, and gradually increasing it to ten or fifteen grains daily. In addition to lessening the manufacture of sugar, the effects observed have been increased appetite, improved digestion and assimilation, with a perceptible stimulation of the nerve centres. In four diabetic patients, I noted a total absence of sugar in the urine after three months' treatment, with proportionate improvement in the general health.

"Though a marked benefit is derived from the use of benzosol alone, the best results are to be looked for in cases where a restricted diet is carefully followed with the additional administration of carbonate of lithium and Fowler's solution in vichy every morning, as recommended by Dujardin-Beaumetz.

"It will thus be seen from the foregoing remarks that the use of benzosol in the manner suggested serves the following useful purposes:

"It stimulates the nerve centres.

"It increases the appetite.

"It lowers specific gravity of urine.

"It controls the excretion of urine.

"And lastly, modifies sugar formation, thus lessening the amount excreted."

*Bismal* is the short name given to a salt made by E. Merck, of Darmstadt, Germany, chemically a bismuth methylene-di-gallate. It is described as a very bulky grayish-blue powder. Dr. F. von Oefele appears to be the only prominent observer and reporter upon its use. He claims that in 100 to 300 milligrammes (about  $1\frac{1}{2}$  to  $4\frac{1}{2}$  grains) doses it is a useful astringent for internal administration in such diarrhoeas as will not yield to opium.

Nothing is reported from this country as yet.

*Bismuthol* (bismuth salicylate sodium phosphate?) has not been heard of in the medical literature of the year.

*Boral* is a compound of aluminium borate and tartrate, prepared in Germany and now being experimented with in the private and hospital practice of Dr. P. Koppel, of Berlin, as an astringent and bactericide in the diseases of children, particularly in purulent otitis. It is reported to be a colourless, crystalline, slightly acid compound, soluble in water. It is used either by insufflation or in solution.

It is not yet known in this country.

*Bougies* (gelatin) of alum and tannin are no doubt of much value to the surgeon in certain cases and therefore the following directions are recommended to furnish very satisfactory results:

"Macerate 5 parts of gelatin in 35 parts of water for fifteen minutes, then add 10 parts glycerin, warm until the gelatin is dissolved and the liquid has evaporated to 40 parts. This may be rapidly and conveniently done in a capsule on an iron plate over a gas jet. To the hot mass add a warm solution of 8 parts of alum in 25 parts of water. This addition causes the gelatin to coagulate, but on continued heating, it again liquefies. Evaporate to 64 parts and strain. The mass then contains  $12\frac{1}{2}$  parts per cent. of alum. In a similar manner tannin may be combined with a gelatin basis by adding a solution of tannin in glycerin, 1 in 5, to the hot mass; the coagulated mass also, in this instance, becomes liquid again. The water is driven off and the liquid run into moulds. By this method perfectly transparent bougies are obtained."<sup>1</sup>

*Bromalin* (brom-ethyl-formin), recommended in the treatment of epilepsy and other nervous affections, has not appeared in print during the past year except as repetitions of old reports.

*Bromides* still continue to be used and abused. Reports of intoxication are still too frequent, not only from the too general and almost routine use by the laity without instructions, but after regularly prescribed use and under the eye of the physician in charge. Dr. S. Weir Mitchell, of Philadelphia, Penn., has considered it important at this time to give timely warning to the profession of the prevalent abuse, in a paper presented at the recent meeting of the Association of American Physicians. The bromides surely should not be given in regulation doses to all patients alike without due consideration of the idiosyncrasy and susceptibility of each individual case. They are too valuable agents to be abused and cast into disrepute by ill-advised use.

They appear to receive the most attention in the treatment of epilepsy, in which the ammonium, potassium, sodium, strontium, and gold salts are used. The sodium and strontium bromides appear to have the most favourable records. The wisdom of giving small and repeated moderate doses or large ones, is still a mooted question. The use of the gold salt is still being studied. Combined with arsenic and mercury in solutions of tribromide of gold with oxybromides of arsenic and mercury, it has been given in neurasthenia, epilepsy, syphilis, and acne. A well-known English manufacturer has prepared what he calls liquor auri brom. arsenatis or "bromaurum," and also liquor auri brom. hydrarg. arsenatis or "hydraurum," as being stable solutions and well suited for hypodermic use if desired.

<sup>1</sup>Pharm. Journ., vol. ii, Fourth series, p. 434.

*Bromoform* is now rarely alluded to in the treatment of other affections than pertussis. In this use it is apparently on the increase. Although a most potent, and in one sense a treacherous agent, for poisoning cases continue to be reported, still it is now being better understood and is overcoming the prejudices of many who preferred not to employ it. It is probably best administered in water, or rather with water, for its specific gravity is such that it sinks to the bottom when dropped in water. Therefore it is necessary that the whole contents of the glass or spoon should be taken. Children do not object to the dose, as it has an agreeable flavour. It is generally prompt in action.

Dr. Ferreira of Rio Janeiro, Brazil, continues to approve strongly of its use. He prefers to add sufficient alcohol to dissolve the bromoform, which removes the liability of leaving behind the heavy liquid when attempting to administer it. For a child under one year he uses three to six drops; over one year, six to fifteen drops. As the bacterial origin of pertussis is now pretty uniformly recognised, bromoform may be classed as a germicide in its action. Dr. Ferreira claims also that it is a depressant of the reflex excitability of the nervous system, as the number of spasms are not only so promptly diminished, but the diminution progresses until they entirely disappear.

It is reported that Dr. Bancock finds the following formula most efficient in the treatment of pertussis:

Bromoform . . . . .	15 parts.
Tinct. of gelsemium . . . . .	16 "
Syrup of lactucarium . . . . .	120 "
Powdered acacia . . . . .	q. s.

The dose is three or four teaspoonfuls each day.

Mons. Marfan has now taken pains to acknowledge a change in his opinion of the past three years, that antipyrin and belladonna were the only efficient remedies in pertussis, by proclaiming bromoform as superior to either. In the beginning of the treatment, he gives in each twenty-four hours four drops of bromoform for each year of the child's age, making the dose come every eight hours. He does not look for improvement for the first two or three days, as there may be an aggravation of the symptoms. After this, however, improvement is evident. Failure seldom occurred, but in such cases the administration of antipyrin proved successful. In his whole experience, he only saw one case of general poisoning symptoms. He does not approve of adding alcohol

to dissolve the bromoform, as recommended by Dr. Ferreira and Dr. K. Stepp of Nuremburg, Germany. He employs the following formula :

Bromoform . . .	48 drops	
Sweet almond oil . .	20 grammes	(about 5 drachms)
Powd. tragacanth . .	2 "	( " $\frac{1}{2}$ " )
" acacia . . .	4 "	( " 1 " )
Cherry-laurel water . .	4 "	( " 1 " )
Distilled water to make	120 cubic centimeters	( " 4 fluid ounces)

The bromoform should be well shaken with the almond oil and then the other ingredients added. A teaspoonful of the mixture contains two drops of bromoform.

Dr. Otto Fiertz believes in large doses, and has treated 75 cases with excellent results. His rule is to give two drops more than the child's age in years in sweetened water every eight hours, and it appears to be well borne. He increases the dose by one drop if improvement is not shown in a week. He believes so thoroughly in this agent that he classes it as a "specific." The treatment must not be discontinued abruptly but slowly diminished for two weeks, when a more rapid decrease may be begun.

*Calcium Sulphide*, although still used by some practitioners, has not taken any prominence in the current medical literature of the year.

*Camphor*, owing to its growing importance, its more extended use both in medicine and in the arts, as well as its increasing scarcity and expensiveness, is of especial interest at this time. Therefore it may be profitable to repeat here an instructive article found in *Nature*, Vol. 54, page 116, which raises the question of its artificial cultivation :

"Camphor is not the exclusive product of any one natural order, genus, or species ; but what is more remarkable, of closely allied species of camphor-yielding genera—one species possesses the secretion, while no trace of it is found in another. Although several kinds of camphor are articles of commerce, little, if any, reaches this country, save that obtained from *Cinnamomum camphora* (*Camphora officinarum*), a member of the laurel family, and of the same genus as the tree whose bark furnishes the spice called cinnamon. Like many other natural products of which scientific research has multiplied the applications, camphor is becoming dearer and scarcer, and the question has arisen, How is the supply to be maintained equal to the demand? The bulk of the



camphor imported into Europe comes from Japan and Formosa, and comparatively little from China. This is the product of *Cinnamomum camphora*, and Dr. E. Grasmann has published an interesting account of this tree, both from a scientific and commercial standpoint. He has rather overweighed his article with second-hand information respecting laurels generally and those of Japan in particular, which, as might be expected, is inaccurate in some details. Disregarding these, we find much that is interesting concerning the camphor-tree itself, which is one of the noblest objects in the forests of eastern subtropical Asia. It attains gigantic dimensions, surpassing all other trees of the Japanese forests, at least in girth of trunk if not in total height. Dr. Grasmann gives the recorded dimensions of various notable trees, but what is more to the point, he also gives measurements made by himself. A tree in the neighbourhood of the town of Miyazaki, Oyodomura, measured in 1894, was 14.80 metres in circumference at 1.30 m. from the ground, or 4.48 m. in diameter, and it was 35 m. high. There is an illustration of this giant reproduced from a photograph. Concerning the distribution of the camphor-tree in Japan, the author states that it grows naturally in Kinshin up to about  $34^{\circ}$  lat, and scattered in favourable situations some  $2^{\circ}$  farther north, the extreme limit being  $36^{\circ} 24'$ . It is abundant in the Island of Formosa, and also occurs in the Tsusima and Luchu groups. On the mainland of China, according to Dr. Grasmann, it inhabits the coast region from Cochin-China to the mouth of the Yangtzekiang, and it may be added that it is now known to extend westwards at least as far as Ichang in the central province of Hupeh.

“From Dr. A. Henry’s notes accompanying his specimens in the Kew Herbarium, it appears that the wood is in great request, but no camphor is extracted; and Consul Playfair reported the same from Pakhoi, Kwangtung, in 1883. Indeed, the camphor industry would seem to be at present very limited in China, although the tree is common and widely spread. The little that is exported is mostly from the province of Fokien, but the amount is increasing in the same measure as the production is decreasing in Japan. In the latter country something has been done to maintain the supply, but Dr. Grasmann holds that the present rate of planting is wholly inadequate. He urges the importance of increasing the plantations to the greatest possible extent, inasmuch as every part of the tree is useful, from the roots to the young shoots and leaves. Even the fruit is employed in the preparation of tallow. In For-

mosa camphor distilling has been carried on in the most recklessly extravagant manner imaginable. It is suggested that Japanese rule in the island may put a stop to such disastrous waste.

“With regard to the increasing price of camphor, it has been stated in various publications that this is due to its being used in the manufacture of smokeless powder. In reply to inquiries on this point, Sir Frederick Abel wrote to the Director of Kew in November last, as follows :

“‘Any increase of demand, involving a rise in the price of camphor, is not due to its application as a constituent of smokeless powder. That material was used in the earliest days of the manufacture of a successful smokeless powder for artillery and small arms; but its employment was soon demonstrated to be attended with serious practical disadvantages, and its application for the purpose can therefore not be said to have been other than experimental, and of no great importance, even at that time, as affecting the market value of camphor. This substance has, however, been used extensively for many years past, and no doubt in continually-increasing quantities, for the conversion of collodion cotton into the material known as celluloid, which is applied to the manufacture of imitation ivory, tortoise-shell, horn, and a great variety of purposes.’

“As Dr. Grasmann observes, the greatest enemy of the camphor-tree is man, and in Japan large trees are eventually killed through the felonious nocturnal grubbing of their roots. Some birds are fond of the fruit and seed, and the caterpillar of *Papilio sarpedon* feeds on the leaves; but, except to young plants, they cause comparatively little damage. Apart from the wanton destruction of trees, the probability of the supply of camphor being maintained is seriously diminished by the fact that the tree grows but slowly in its early years. At the same time it colonizes freely, and is now naturalized in several countries, notably in Madagascar, where, according to Dr. Meller, in a note accompanying a specimen in the Kew Herbarium, it was abundant as long ago as 1862, and was much used for building purposes.

Next in point of importance in producing camphor is *Dryobalanops aromatica*, a tree belonging to the Dipterocarpeæ, and inhabiting Borneo and Sumatra. The formula of ordinary camphor is  $C_{10}H_{16}O$ ; of Borneo camphor,  $C_{10}H_{18}O$ ; and the latter can be artificially prepared from the former. Borneo camphor is deposited in clefts and hollows of the wood, and has simply to be taken out; but it is comparatively rare, and exceedingly dear, bringing

eighty times more, according to Grasmann, than ordinary camphor. Nearly the whole production is imported into China, where it is esteemed beyond the ordinary camphor, and used as incense.

*Blumea balsamifera* (Compositae), a shrubby plant exceedingly common in tropical Asia, yields a kind of camphor by distillation. Hainan is the principal seat of the industry, but the crude article is refined at Canton, whence there is an annual export of about 10,000 pounds. No doubt this source of camphor could be much more extensively utilised.

Members of various other natural orders, notably the Labiatae, yield essential oils of the same composition and having the same properties as camphor. Menthol is an example."

Dr. Fr. Schilling, of Nuremberg, Germany, considers the subcutaneous injection of a 10 per cent. solution of camphor in olive oil a valuable remedy for the collapse often occurring in acute pneumonia or like conditions. He has noticed that large doses are well borne when administered in this way. In adults he injects at once 5 grammes (77.2 grains) of the above solution into each forearm. No disagreeable after-effects have ever been noted, but the injection must not be made into a vein. After careful reading and personal observation, he concludes that the danger of large single doses of this agent has been much overestimated, and has been due to trusting too closely to the inferences drawn from already recorded experiments. Such evidences are excellent in their way and of value up to a certain point, but they should only be considered as a basis to work upon, not as an accurate therapeutic guide for its use in man.

The following mixture has been recommended for toothache :

Cocaine hydrochlorate . . . . .	1 part
Camphor . . . . .	50 parts
Chloral hydrate . . . . .	50 "
Water . . . . .	a few drops to obtain a clear solution.

A little of this solution is placed on a small piece of cotton introduced into the cavity of the tooth and allowed to remain there for twenty-four hours.

*Chinosol* is a new antiseptic, disinfectant, deodoriser, and bactericide, manufactured by a well-known firm in Hamburg, Germany. It is described as a neutral compound of oxy-chinolin in the form of a fine, bright yellow crystalline powder, readily soluble in water, not caustic or corrosive and non-toxic, with an astringent

gent taste like carbolic acid and a slightly aromatic odour. It does not coagulate albumen, but it is very readily precipitated by alkalies. It is reported to be forty times more active than carbolic acid, for a solution of 25 parts in 1,000,000 is sufficient to prevent the development of the staphylococcus pyogenes aureus. Professor Kossmann has used it in the Hygienic Institute of Munich, Bavaria, in place of corrosive sublimate and carbolic acid, and confirms the favourable report of Professor Emmerich, of Munich, and others. It is offered in solution and in tablets, and applied on gauze and absorbent cotton. It is recommended not only to the general surgeon, but to obstetricians, gynecologists, and dermatologists. It does not attack the hands even in as strong a solution as 1 in 500, but simply stains them and the linen a bright yellow colour, which, however, is readily removed by fresh water.

*Chloralamid* (chloral formamide), although still largely used, has received little attention in the medical literature of the year.

*Chloralose* (anhydro-gluco-chloral), although much in general use, has had at least one more unfortunate mental disturbance to be charged against it. Dr. F. Dufour, of Marseilles, France, reports the case of a woman who had just taken a second dose of 250 milligrammes (about 3.8 grains) when he arrived on call—the same dose from which Dr. Rendu observed the alarming intoxication alluded to here last year. Nothing new has been reported.

*Chlorobrom* (equal parts of chloralamid and potassium bromide) has been practically unheard of during the past year, although it is well known that it continues to be used with some apparent success in the prevention of sea-sickness. There is much doubt, however, whether the preliminary directions given to clear out the bowels well, not with a simple saline, but with an aperient affecting the liver, does not alone accomplish the desired result.

*Chloroform* continues to receive attention in the way of attempts to counteract its unfortunate bad effects, by administering it with other anaesthetics. The well-known "A C E" mixture still continues to be used quite largely, particularly by the English. There has now been a recent attempt to renew and increase the use of the once considerably talked-of mixture with the oxygen. This plan is quite old, and if nothing has been accomplished so far, since 1860, it cannot be said to have much chance of success now. The administration of chloroform with pental (tri-methyl-ethylene) has recently been reported on.

As is well known, foreigners—especially the English—are quite



partial to chloroform, and comparative results with ether have continued to be reported for some years past. Professor Eisendraht has been carrying on such a study and reports on 130 consecutive administrations, testing the urine before and after, and watching the whole functional behaviour of his patients. Pre-existing albuminuria is apparently more frequently increased by ether than by chloroform. Albuminuria is produced in 25 per cent. of normal patients after ether, and in 32 per cent. after chloroform.

Prof. M. Rosenberg maintains that the danger to both the heart and respiration in administering chloroform is "occasioned reflexly by the irritating action of the chloroform on the terminations of the trigeminus distributed to the mucous membrane of the nose, that the same is true of any other anaesthetic taken through the nose, and that this may be obviated by first anaesthetising the mucous membrane of the nose by using cocaine, which is an antidote to chloroform. Having tried this method in fifty cases, he concludes: 1. The commencement of anaesthesia is less disagreeable for the patient, who never makes defensive movements. 2. The excitement stage is often wanting, and is always slight, except in cases of alcoholics. 3. During anaesthesia it is very rarely a patient vomits, and if vomiting does occur there is little retching. 4. Upon awakening, the patient experiences no disagreeable sensation, and is not haunted by the smell of chloroform or ether. The method pursued is as follows: The patient is directed to blow his nose in order to clear the mucous membrane, then leaning forward or sitting (never lying), to snuff a centigram of a powder consisting of 10 per cent. of cocaine hydrochlorate and some inert substance. Repeat in about three minutes and commence general anaesthesia. If the operation is prolonged repeat chloroform continuously, drop by drop."<sup>1</sup>

The subject of the decomposition and preservation of chloroform has been investigated and discussed by many observers in past years, both in the old and this country. Mr. D. B. Dott, a prominent pharmacist of Edinburgh, Scotland, has now again brought up the subject. He states that Mr. L. Allain had more recently drawn "attention to the fact that sulphur, added in the proportion of one to a thousand of chloroform, acted as a preservative, preventing decomposition in chloroform exposed to diffuse daylight for an indefinite period. Allain does not explain the action of the sulphur." As it had been previously shown, particularly by Messrs. D. Brown and D. Rainy Brown, of Edinburgh, "that oxy-

<sup>1</sup> Med. Times, vol. xxiv., p. 356.

gen is essential to the decomposition of chloroform by light, and that chlorine is always present at the earlier stages of alteration, it seemed probable that the sulphur acted as a reducing agent, and that any substance slightly soluble in chloroform and readily oxidisable would likewise act as a preservative. I therefore divided some pure absolute chloroform in four bottles. To the first was added a minute portion of morphine, to the second gallotannic acid, to the third hypophosphorous acid, and the fourth was left pure and simple. These were all exposed in a glass case to diffuse daylight, but where occasionally rays of direct sunlight reach. After a few weeks the pure chloroform showed signs of decomposition, distinctly evident to the nose and to silver nitrate. None of the others had decomposed, and even after a month's further exposure are still apparently unaltered. It therefore appears probable that any substance which is prone to oxidation and soluble, however slightly, in chloroform will prevent or greatly retard decomposition. If that is correct, one would infer that the preservative action of alcohol is partly due to its capacity for oxidation, whatever secondary part it may also play."

*Chlor-phenols* (mono- and para-chlorophenol), particularly the para variety, has received some attention during the past year. Among other observers, the most prominent has been Dr. A. Spengler, of St. Petersburg, Russia, who has been experimenting in the wards of the Military Academy of Medicine in his city, in the line recommended in 1894 by Dr. N. Simanovski, of the same city, who introduced it into laryngological practice. Its antiseptic properties were marked. Out of 26 cases of tubercular laryngitis, 10—nearly 38.5 per cent.—completely recovered, and some marked improvement was noticed in the others. The solutions used varied from 10 to 50 per cent. in glycerin, and were applied thoroughly by means of a brush two or three times a week. Dr. Spengler does not maintain that this agent is a specific, but simply that it removes the infiltrations and ulcerations, even if situated on the posterior wall of the larynx. It is just then that lactic acid and surgical treatment have given unsatisfactory results. Para-chlorphenol seems to act as a far superior anaesthetic than cocaine—the anaesthesia at times lasting quite forty-eight hours.

Dr. Conrad Berens, of Philadelphia, Pa., offered "A Few Remarks on the Clinic Use of Ortho- and Para-Chlor-Phenol,"<sup>2</sup> to the Section of Laryngology and Otology at the last meeting of the

<sup>1</sup> Pharm. Journ. vol. ii., fourth series, p. 249.

<sup>2</sup> Journ. Amer. Med. Assoc., vol. xxvii, p. 728.

American Medical Association, held in Atlanta, Ga. After alluding to Dr. Simanovski's preliminary report, he states his reason for undertaking his experiments :

"The endorsement of ortho-chloro-phenol was of such a nature that I was induced to make some trials with it, as well also as of para-chloro-phenol."

To those specially interested his testimony will be of service. He closes as follows:

"In conclusion, then, I have no hesitation in recommending the further clinic use of ortho-chloro-phenol in the belief that it will prove a valuable addition to the pharmacopoeia of the rhinologist and aurist, and prove itself worthy of the fullest confidence, especially in those cases where the commonly resorted to medicaments have not only failed to relieve the patient, but have disappointed the expectations of the surgeon."

*Chlor-Salol* (the new antiseptic of last year analogous to chlor-phenol, but in place of carbolic, salicylic is the combining acid) has received no notice in the medical literature.

*Chroatol* has apparently been dropped almost immediately after announced. The dermatologists were the ones to be most interested, but nothing practical has come from them.

*Citrophen* (phenetidin citrate) has been practically unheard of during the past year.

*Cod-Gall* has recently been urged as an efficient substitute for cod-liver oil by Mr. Clarence A. Wright, of Rochester, England, and he urges all practitioners to give it a trial. He writes to the editor of the London *Lancet*<sup>1</sup> as follows :

"The claim of cod-liver oil to be considered, if not a specific, at least a powerful alterative in diseases of the respiratory tract, has long been recognised. Yet, owing to its unpalatability and the nausea attendant on its administration, it is the common experience of all that the cases which on theoretical grounds are selected as most suitable often prove least amenable to such treatment. These are for the most part cases characterised by a general wasting of the body and failure of its nutritive functions. How insuperably difficult it is to overcome this inherent propensity of the oil may be remarked when we notice how the ingenuity and art of the pharmacist have been strained to the utmost in devising ways and methods whereby it may be disguised, if not destroyed. Its combinations with malt, the hypophosphites, etc., are so well known that allusion to them would be superfluous. It would likewise

<sup>2</sup> Vol. ii for 1896, p. 156.

prove a useless reiteration to enumerate the many oils and fats that have been proposed as substitutes for it. However feasible such substitution as a theory may seem, yet in practice, for reasons which I subjoin, their use has not been attended by any marked success. Cod-liver oil has been proved by French investigators to owe its activity, not to any peculiarity in the nature and constitution of its oleaginous constituents, but to certain definite ante-mortem products of liver action, which not only promote the absorption of the oil, but also materially assist digestion and exert the well-known alterative action. It has likewise been proved by examination of frozen and prepared sections of a fresh liver that these physiologically active constituents of cod-liver oil are of biliary origin, for their distribution in sections so made bears a definite relation to the ramifications of biliary radicles, and not to the fat cells of the liver. I was induced thereby to utilise that biliary product of unchallengeable ante-mortem liver action—cod-gall—as a substitute for cod-liver oil, and I can now, after a trial of eighteen months, say that I have every reason to believe it an efficient, active, and palatable substitute for cod-liver oil, and one that deserves a trial. My usual method of employing it is by making a wine of cod-gall (*vinum gadeo-morrhuae*), by adding one ounce of fresh gall, along with two and a half drachms of extract of pancreas, to a pint of wine (sherry or port optionally), and after ten days filtering it through some cotton wool. I administer the wine so made in doses of one to four teaspoonfuls at or after meals four times a day.

*Creolin* (liquor antisepticus)—1 part resin soap and 2 parts crude carbolic acid, 20 per cent.—still requires caution to be exercised in its use. Although the enterprising introducers and manufacturers of this “Sanitary Compound” claim that if their explicit directions be followed out in regard to using it only “in 1 per cent. to 3 per cent. solutions” . . . “absolutely no harm can be done,” and therefore they “are perfectly entitled to quote our (their) preparations ‘innocuous,’” still the following unfortunate results apparently only bear out some previous experiences from various other sources and deserve to be repeated as a warning:

“Creolin compounds are now so extensively used as disinfectant washes, more especially as they are believed to be non-poisonous, that the results of an investigation by Professor Hobday of the Royal Veterinary College, calculated to disturb this notion, will be read with interest and instruction; at any rate, they should place the public on their guard in respect to the application of these



compounds to the body. The investigation was set on foot by observing the fatal effect of applying solutions of creolin to a couple of valuable ferrets affected with lice and mange. The amount of creolin used was estimated at about two ounces to a quart of water, in spite of which dilution both animals were dead within half an hour of the application. Again, in the case of a valuable bull terrier severely affected with follicular mange, 'the result was most alarming, and all attempts to save the animal failed,' the application having consisted in rubbing the affected parts with a solution containing four ounces of creolin and four ounces of water. To set at rest the question whether this alarming result was due to any peculiar idiosyncrasy of the animal, a fox terrier was treated in the same way, but the result was equally unfortunate. Several animals (dogs and cats) were then submitted to experiment with more or less toxic effects, and in the majority of instances those effects were followed by death. This important report concludes with the following observations: That creolin is a narcotic and irritant poison to the dog and cat, and that its use in these animals must be watched with the greatest care; that it is especially toxic when spread in emulsions of a certain strength over a large area of the body; that its effect is more rapidly seen and more violent when mixed with water than when applied pure or when mixed up into the form of an ointment; that when mixed in certain proportions and applied externally it will act as a violent irritant; that the less refined preparation of creolin is not so toxic in action as pure creolin; and that it is not so readily absorbed from the stomach, from small wounds, or from the subcutaneous tissues as from a large area of skin surface. The results are certainly very striking, and would appear to show that creolin cannot be regarded as an absolutely safe external application. Its claimed advantage, therefore, over carbolic acid of being non-poisonous cannot fully obtain. Professor Hobday does not enter into the exact composition of the preparations he used. It may be fairly assumed, however, that they consisted of a strongly alkaline and resinous solution of cresylic acid. Did the alkali play any part in the symptoms observed, and was carbolic acid present in appreciable quantity? The observations, at any rate, are valuable and are based upon trials made with preparations to be found on the market which are generally stated to be innocuous. It is reasonable from the foregoing to enjoin care in the use of these preparations for external application to the human being and other animals."

<sup>1</sup> The London Lancet, vol. i for 1896, p. 1733.

*Creosol* (made up of the constituent phenols of beechwood creosote and about 40 per cent. of tannic acid) has not appeared in the medical or pharmaceutical literature of the year under this name, but undoubtedly the two ingredients have been employed many times separately on just such occasions as this compound would be recommended.

*Creosotal* (so-called creosote carbonate) apparently still presents reasonable advantages over creosote as an efficient agent in the treatment of tuberculosis. The evidences continue to show that the combination breaks up so slowly in the alimentary tract that it is not only less irritating than creosote, but keeps the whole system more or less continuously under the influence of the important element of the compound. The excretion of the creosote is evident from the lungs and kidneys.

Only one prominent report of value has appeared during the year. Dr. Wm. H. Dukeman, of Los Angeles, Cal., reports his very encouraging results in the treatment of pulmonary tuberculosis. He says:

"The best mode of administering the drug is to drop it in the yolk of an egg, well beaten up, and taken after each meal and before retiring at night. I also make use of the white of the egg by having it beaten up in a glass of milk and taken between meals, with or without wine, as desired. I usually commence with 5-drop doses, and increase 1 drop a dose each day until the patient takes the amount necessary to produce the desired effect. When I arrive at the dose from which the patient himself notices marked improvement, I advise the continuous use of that dose for a week or two without increasing it, but then to again increase 1 drop a day for a week, or until marked signs of improvement again show themselves; the dose then remains uniform for some time. In this way I have had no reason as yet to give beyond 40 drops, although much larger doses have been given. I should not hesitate to increase the dose up to 60 drops should indications demand such a quantity." . . .

"In conclusion it may be said that although this climate is no doubt a helpful agent in the treatment of patients with pulmonary tuberculosis in its earliest stages, yet under other treatment they do not always show very marked gain, or what gain there is in many instances not continued; but, under the creosote carbonate treatment, the gain is of a more strengthening character and apparently will prove permanent."<sup>1</sup>

<sup>1</sup> Med. News, vol. lxvii, p. 648.

*Creosote* has received considerable attention throughout the past year, especially in the treatment of pulmonary tuberculosis. At times the discussion has been pretty vigorous, both for and against its use. The considerable variation which is noticeable in beechwood creosote—the only proper one to use—must naturally produce quite varying clinical results. The amount of guaiacol has been known to vary from 3 to 30 per cent., the amount of cresol from 10 to 40 per cent. Definite tests for uniformity should therefore be looked for. A French observer “suggests that creosote derived from beechwood should only be employed if it be visibly darkened on prolonged exposure to light, and possesses an agreeable aroma somewhat resembling vanilla. Fractional distillation of the sample should be conducted, treating 100 cc. in a fractionating flask of 125 cc. capacity, and the fractions being collected in a graduated receiver. This distillation should be very regular, drop by drop, and should take place between 200 and 220° C. The author finds that the specific gravity of the fraction distilling between 200 and 210°, which contains the greater part of the guaiacol, gives a reliable indication of the amount of that body contained in it. In the samples examined the guaiacol content rose from 10 to 36 per cent., as the specific gravity increased from 1.077 to 1.090.”<sup>1</sup>

The principal concentrated discussion on its use in pulmonary tuberculosis has occurred in the Paris Medical Society of the Hospitals throughout the meetings in January and February last. Dr. Burlureaux, for instance, believes in the injection of large doses. Other prominent observers recommend medium doses and long-continued administration. Another class assert that the improvement comes from the better care and food received by the patient, and not from the creosote treatment. The majority, however, agreed that it was of marked benefit in the scrofulous form of the affection. Some observers spoke strongly against giving it by the mouth—injection, enemata, suppositories, or inunction apparently would be far preferable to the mouth. Dr. Burlureaux does not claim that it is a specific against tuberculosis, for he merely considers it in the light of an auxiliary to the hygienic treatment. The reason he speaks so warmly in its favour is, first, that it may be employed in all classes of society, and second, in his experience, patients who bear it well may be almost cured by it.

Dr. F. R. Walters, M.R.C.P., of the North London Hospital for Consumption, England, writes enthusiastically in a paper on

<sup>1</sup> Pharm. Journ. vol. ii, fourth series, p. 422.

"The Subcutaneous Use of Creosote and Guaiacol in Pulmonary Phthisis":<sup>1</sup>

"Of all the drugs which have been used in the treatment of phthisis there are probably none which have been so widely adopted as wood creosote and its derivations." . . . "Burlureaux depended mainly on subcutaneous injections, and gave them nearly daily. My own cases only had them from once to three times a week, as daily injections are not convenient in out-patient practice. They all took creosote or guaiacol in some other form to about 10 to 15 minims daily." . . . "As regards the general effects, I did not find any complaint of tasting the creosote directly after injection, and am satisfied this was not usually the case. In one case, there was slight collapse after the first injection of 20 minims of a one in 15 creosote solution; the same case subsequently readily stood drachm doses. In one case, the appetite greatly improved, the lung trouble nearly disappeared, the cough disappeared, and weight was increased. This patient remains in good health. In another, the lung trouble had increased, but much more slowly than was to be expected, while the general health remains exceptionally good. The two others were not long enough under treatment to be able to judge.

"In conclusion, I believe the treatment is well borne, and may be useful where other methods fail. The doses should be very cautiously increased, and the treatment should not be tried where the kidneys are unsound, or there is a large area of inflamed lung, or decided signs of intolerance. No form of creosote treatment is of use unless it is long continued. I believe it to be useful in many cases if judiciously applied. One in 5 guaiacol appears to me to be as well borne as 1 in 15 creosote solution; and notwithstanding the results obtained by various observers, I do not think it is finally settled that guaiacol is inferior to creosote in the treatment of phthisis. The results with an ordinary syringe are apparently quite as good as with the Burlureaux apparatus, which should, I think, be reserved for exceptional cases."

Dr. J. O. Cobb, of Cincinnati, O., surgeon in the United States Marine Hospital Service, gives his "Eleven Years' Observation in the Use of Creosote in the Treatment of Tubercle of the Lungs,"<sup>2</sup> and draws general conclusions only:

"For eleven years I have had a greater or less number of patients constantly under observation with the creosote treatment, and feel-

<sup>1</sup> Brit. Med. Journ., vol. ii for 1895, p. 1488.

<sup>2</sup> Journ. Amer. Med. Assoc., vol. xxvi, p. 370.



ing the importance of the subject and the general interest taken in this disease, I have been led to report my experience. A large majority of patients have been seamen of the merchant marine. The conditions noted cover all stages of the disease.

"The places of observation were South Carolina, Texas, different stations on the Great lakes, a few cases at Evansville and St. Louis, and the remainder at Port Townsend, Washington.

"A majority of the cases were not diagnosticated by bacteriologic examination, as physical methods easily revealed the condition. All cases of 'chronic pneumonic phthisis,' 'chronic pneumonia,' etc., are excluded.

"Pure beechwood creosote was given throughout. Dosage ranging from one to seventy minims has been tried. Some cases have been treated to a termination with a few minims given constantly and without variation. Others were given gradually increasing doses until the limit of toleration was reached, when the drug was recommenced at the small dose, to be again carried to the limit of toleration. Still other cases were given gradually increasing doses to the limit of toleration, then decreased to the point of toleration and kept there to the end of the treatment. Some of the cases had other treatment in conjunction, though the large majority were treated exclusively with creosote.

"The serious objection to creosote is the unpleasant, sickening, and burning sensation which it causes in the stomach. I have used the pure creosote made into emulsions, mixtures, pills, etc., none of which were at all satisfactory. The best method that I have found is to nearly fill a gelatin capsule with pulverised acacia, drop in a few minims of the creosote, and take at once."

Dr. Walter F. Chappell, M. R. C. S. Eng., of New York, brings up another mode of administration which appears to be successful with him, in a paper read before the Baltimore, Md., meeting of the American Medical Association in May, 1895, on "Further Observations on Submucous Injections of Creosote in the Treatment of Laryngeal Tuberculosis."<sup>1</sup> He exhibited an automatic syringe especially adapted for this form of medication, and concluded as follows:

"Physicians, who have been more or less successful in the treatment of laryngeal tuberculosis by various methods, will agree that it was obtained only by the systematic and persistent use of the selected methods.

"While the writer does not wish to be understood to think that

<sup>1</sup> Journ. Amer. Med. Assoc., vol. xxv, p. 949

creosote is the only drug to be used in tuberculosis of the larynx, he does assert that when the submucous treatment is decided upon, it should be given by the automatic syringe already mentioned, no matter what remedy is used. The exact depth and amount of the injection can then be regulated and the field of injection always kept in view in the laryngeal mirror. Usually the submucous injections have been reserved for infiltrated and hypertrophied tissues, and not for the ulcerative stages. The ability to give a superficial or deep injection, according to the requirements of the case, has added greatly to the degree of usefulness of the submucous method. A *resumé* of the claims for submucous injections of creosote is:

"1. In the early stage of the disease, when there is only slight thickening of the tissues as a result of the tubercular deposits, the method as described by the writer brings the creosote in direct contact with the deposits. Further progress is frequently arrested, and the infiltrations subside.

"2. When the stage of ulceration is reached, and the ulcers are comparatively deep, with some surrounding infection, injections into the surface of, and around, the ulcer assist granulation and arrest further invasion of tissue.

"3. When the affected tissues are rapidly necrosing, the patient is usually too weak to undergo curetting or excision. The injection of creosote is then very beneficial, relieving the pain and laryngeal soreness, hastening the separation of necrosing tissue and arresting the progress of the ulcerations."

A comparatively new method of treatment in septicaemia cases has recently been extensively tried in Germany with gratifying results: 1.2 cc. (20 minims) of a solution containing equal parts of pure creosote and camphorated oil were injected under the skin three times a day. Even with a temperature of 104° F. (40° C.) and a pulse of 140, such an injection brought down the temperature and pulse rapidly. Even those cases which appeared to be in an almost hopeless condition made a satisfactory recovery by this treatment exclusively. No serious local or general troubles appeared to follow the injections, and the medical profession in this country are urged to give it an extended trial as being certainly safer than the intravenous injection of corrosive sublimate solution, as advised by Professor Kezmaregki in these septicaemia cases.

This treatment, however, has been criticised adversely, for the anti-bacterial effect of creosote is disputed, and even definite proof

has been furnished that this agent has no direct action on such bacilli as those of tuberculosis.

Cases of acute gonorrhoea have been apparently successfully treated with injections of an emulsion of creosote varying from 2 to 10 per thousand.

Dr. V. P. Zerenine has apparently obtained favourable results from the use of compresses saturated with creosote, or with a 10 to 30 per cent. solution in glycerin or oil. He acknowledges this to be a very slow treatment, for as much as a month is required, but he claims several advantages—relapses do not occur, his directions are readily carried out, and unsightly cicatrices are avoided.

Mr. Leonard Rogers, M. B., F. R. C. S., of the Royal Indian Medical Service, publishes "A Note on the External Use of Creosote in the Treatment of Malarial Remittent Fevers."<sup>1</sup> He states:

"The action of external applications of creosote and guaiacol in producing perspiration and lowering the body heat suggested to me that they might be of use in the treatment of malarial intermittent fevers. I have used 15 minim doses of creosote rubbed into the axilla and covered with cotton wool, in eight cases of severe intermittent fever, with temperatures varying from 103.2° to 104.4° F., the temperature being either stationary or rising at the time the drug was applied. In every case, perspiration, usually free, was produced in from half an hour to two hours, more commonly in about three quarters of an hour, and was accompanied by a marked fall of temperature, averaging 1.6° F. within three quarters of an hour, 2.3° after an hour and three quarters, and 3° within four hours of the use of the drug. Not only was the temperature reduced, but at the same time all the distressing symptoms, including the severe headache always present with high fever in these cases, were markedly relieved, and the patients stated they became quite comfortable when the perspiration came on. In some of these cases, during other paroxysms of the fever, which were not treated with creosote, but in which the ordinary diaphoretics, such as ammonium acetate, etc., were given, the temperature remained high for eight or more hours. In only one case was there an after-rise during the paroxysm of more than 1° F. In five out of seven cases in which the blood was examined during the fever, Laveran's organism was found in the red blood-corpuscles. In one case of continued fever in which I tried this treatment, a slight fall of the temperature, accompanied by some relief

<sup>1</sup> Brit. Med. Journ., vol. i for 1896, p. 18.

of the symptoms, was produced, but the good effect lasted only a few hours.

"This method of treatment, I think, deserves a careful trial in tropical remittent and continued fevers, whilst I feel sure it will prove of great service in shortening and lessening the severity of the paroxysms of severe intermittent fevers, as its antipyretic and sudorific powers are much greater than those of the diaphoretics in common use, while it has not the drawbacks of the antipyrin class of drugs, namely, in the depressing action on the heart and the tendency to reduce the number of the red corpuscles of the blood, and thus to increase the state of anaemia caused by malarial fever."

A creosote valerianate, made by a Berlin manufacturer, has recently been introduced, and given the short name "Eosote." It is described as a liquid without caustic or toxic properties. Dr. E. Grawitz is apparently the only observer who has yet reported on it. He employed it in the form of 200 milligrammes (3 grain) capsules in 35 cases of tuberculosis, and in several cases requiring disinfectant treatment for gastro-intestinal troubles. The advantages he claims are, that it is odourless and tasteless; it is well borne, even in quite large quantities, and is inexpensive.

Dr. V. Gilbert recommends the following solution for hypodermic use in the treatment of tuberculosis :

Beechwood creosote	.	25 grammes (about $6\frac{1}{2}$ drachms)
Camphor	. . .	15 " ( " 4 " )
Aristol	. . .	10 " ( " $2\frac{1}{2}$ " )
Eucalyptol	. . .	30 " ( " $7\frac{3}{4}$ " )

Sterilised neat's-foot oil—sufficient to obtain 250 cc. (about  $8\frac{1}{2}$  fluid ounces of solution). 1 cc. (about 16 minims) of this solution contains 100 milligrammes (about  $1\frac{1}{2}$  grains) of creosote.

Dr. Peter Kaatzer does not approve of the usual forms in which creosote is administered. He points out more or less forcible reasons against the prominent forms, and recommends the use of various ethereal oils and extract of coffee to mask the odour and taste. The mixture with extract of coffee supplies a beneficial dilution in the stomach, and can be taken best after meals in milk or beer. He warns against giving more than 30 drops of creosote a day.

*Cutol* is a compound of aluminium borate and tannate prepared in Germany, and now being experimented with along with boral in the private and hospital practice of Dr. P. Koppel of Berlin,



Prussia. It is described as a brownish, insoluble powder, but is rendered soluble by the addition of tartaric acid, thus making the whole practically a mixture of cutol and boral. Dr. Koppel has not only found this agent of service in the same affections as boral, but for one reason and another has used it more frequently than the latter. He finds it of great service in the treatment of moist eczema and pruriginous affections. He applies the following ointment after removing any scabs which may be present :

Cutol	. . . . .	4 parts
Olive oil	. . . . .	10 "
Lanolin	. . . . .	26 "

After the secretion has disappeared he dusts on the following powder :

Cutol	. . . . .	10 parts
Zinc oxide	. . . . .	10 "
Powd. tale	. . . . .	10 "

He has found a 15 per cent. solution of the soluble cutol in glycerin of service in catarrhal endometritis and follicular tonsillitis. He treats haemorrhoids also with a 15 per cent. ointment, and for chilblains and chapped hands he recommends :

Cutol	. . . . .	3 parts
Sweet almond oil	. . . . .	15 "
Lanolin	. . . . .	15 "
Orange flower water	. . . . .	10 "

Nothing is known of this agent in this country as yet.

*Dermatol* (bismuth subgallate) has now had its patent restrictions removed from it by the courts, and thus any manufacturer is at liberty to make and offer for sale bismuth subgallate without fear of being restrained. Little has been reported upon it during the past year, although its use is largely on the increase, especially with surgeons, gynaecologists, dermatologists, and otologists.

*Diaphtherin* (oxy-chin-aseptol)—the antiseptic and astringent—has now practically dropped out of existence as far as the medical profession is concerned. Nothing new has been reported on it for the past year.

*Diuretin* (sodio-theobromine salicylate) has now been before the profession quite ten years, and from the favourable reports of a few enthusiastic observers it should have received more attention. The following are the most prominent for the past year :

Dr. Th. Zangger of Zurich, Switzerland, reports that he finds

this agent associated with digitalis the best and most efficacious diuretic remedy in the treatment of compensatory disturbances in heart disease. He prefers to give it in cachets containing a mixture of 100 milligrammes (about  $1\frac{1}{2}$  grains) of powd. digitalis and 1 gramme (15.4 grains) of diuretin. He gives three of these cachets each day.

Dr. S. Askanazy of Königsberg, Prussia, reports his observations on this agent in the treatment of cardiac asthma and angina pectoris. He finds that it "rapidly dispels asthmatic pneumonia and attacks of angina pectoris in persons suffering from cardiac and renal lesions, and this effect is obtained independently of any diuretic action of the drug.

"This fact has been proved in ten patients, treated by Dr. Askanazy. Four of these presented marked symptoms of cardiac asthma, due in three cases to nephritis and in one case to a lesion of the valves of the aorta. In three cases angina pectoris was associated with asthma in subjects also suffering from aortic lesions. In two patients the dyspnoea had assumed a chronic character. Lastly, one patient with aortic regurgitation presented chronic dyspnoea, which had been gradually and continuously increasing until it had become very severe.

"In all these cases, the administration of diuretin was followed by improvement, and as a rule the asthmatic and stenocardial phenomena disappeared completely. This result was obtained within one or two days at the most, and in one, recovery was usually complete, though occasionally a few attacks supervened later on, but gradually decreasing in severity and duration.

"In the majority of cases, however, the therapeutic effects of diuretin were not permanent, for as soon as the treatment was discontinued, frequently on the very same day, the morbid symptoms were reproduced, but yielded with the same rapidity as before when the administration of diuretin was resumed.

"The quantity of diuretin required to successfully combat asthma and angina pectoris in the patients under Dr. Askanazy's observation was from 3 to 4 grammes daily. This dose of the remedy was invariably well borne, and it is advisable not to increase it, for serious phenomena of collapse have sometimes been determined in cardiac patients who had taken from 2 to 7 grammes daily of the remedy for diuretic purposes. Speaking generally, there is no need of increasing a dose from which good results have once been obtained, inasmuch as reduction in the therapeutic effect of diuretin by the organism becoming accustomed to the

drug is very rarely met with, having been observed only once, in fact, among the ten cases reported by Dr. Askanazy.

"The favourable action of diuretin on asthma and angina pectoris in cardiac and nephritic subjects is doubtless due to the theobromine, and not to the salicylic acid entering into the composition of diuretin, seeing that when Dr. Askanazy administered simply sodium salicylate to his patients, not the slightest effect was exerted on the dyspnoea and stenocardial pain.

"On the other hand, the action in question of diuretin cannot be attributed to its diuretic effects, inasmuch as in the majority of the patients referred to there was no increase in diuresis, the oedema in some cases even persisting after the antiasthmatic action had manifested itself. Dr. Askanazy is therefore of opinion that the antiasthmatic and antistenocardial properties of diuretin are attributable to a tonic action exerted by this substance on the heart.

"This theory, however, does not appear to be very plausible, considering that Dr. E. M. Skerrett, professor of medicine at the Medical School of Bristol, has successfully combated so-called essential bronchial asthma with caffeine, a remedy analogous to diuretin, and it is not probable that any weakening of the heart exists in a case of bronchial asthma. Be this as it may, the observations of Professor Skerrett and Dr. Askanazy are closely allied in many respects, and should be considered together."<sup>1</sup>

Dr. Louis Vintras, of Hanover-square, London, W., England, physician to the French hospital, writes very rationally on "The Clinical Value of Diuretin"<sup>2</sup> as follows:

"With special drugs of this description the difficulty the practitioner meets with is to determine the particular class of cases in which they may be of value. When first introduced, these therapeutical agents are given somewhat at random, and most often only isolated cases are reported or the results merely tabulated under a symptomatic heading without any differentiation of the real pathological conditions; hence arises much of the praise which is lavished on indifferent drugs, while others which have a real clinical value are allowed to fall into disrepute, especially so in the case of a drug such as diuretin, which is meant for the relief of a symptom under certain conditions, which can only be determined after a long period of probation. Having seen this particular diuretic used in a certain number of cases, I have chosen a few typical cases in which it was given with varied re-

<sup>1</sup> The Med. Week, vol. iv, p. 9.

<sup>2</sup> The London Lancet, vol. i for 1896, p. 1132.

sults as the means of furnishing the best indications for further investigations."

He then proceeds to give the details of 4 cases, and concludes:

"As stated above, in considering the value of a therapeutical agent of this kind, it is not the ultimate termination of the case which should form the basis of judgment, but its effect on an individual symptom. Such a drug as diuretin cannot pretend to be a specific treatment in any disease, and its action can only be exerted for the relief of a distressing complication. Reviewing, then, the results of these cases it appears that when the kidney affection is primary and well established—that is, when the deep parts of the organ are affected, as in the parenchymatous form of acute nephritis—and when there is much albumen present, diuretin is of little or no value, while in those cases in which the kidney trouble is secondary to morbid lesions in other organs and the epithelial layer of the urinary tubules in the seat of disease, this diuretic is a valuable therapeutical agent."

*Electrozone* is the name given to an antiseptic solution which is reported to be made up of sodium, magnesia, calcium, and other hypochlorites with a large proportion of undecomposed chlorides. Its odour resembles the officinal solution chlorinated soda. The solution is claimed to be produced by a process of a Mr. Woolf, which simply decomposes sea-water by electrolysis. Analysis gives 2.26 parts of chlorine per 1,000. The amount of sodium chloride (common salt) remains unaltered—33 parts per 1,000. The quantity of bromides and iodides is naturally small.

It is recommended not only as an antiseptic but as a disinfectant and deodorant. It rapidly deteriorates on exposure, and therefore must be well protected.

A weaker solution is offered for internal use and for external toilet use, which analysis gives as 0.6 parts of chlorine per 1,000. This weaker solution is called by the fanciful name of "*meditrina*."

These solutions have been offered for some time in New York, but under these names they have only recently been introduced abroad, and therefore become of more general interest.

*Ergot of Rye*, grown in the Canary Islands, has recently appeared for the first time in London, England. It is interesting from the fact that "A preliminary examination shows that it yields a larger amount of extractive than the Russian and Belgian varieties, and it is quite equal to an average sample of Spanish ergot of rye." Mr. J. C. Umney, F.C.S., of London,



exhibited a sample at the meeting of the Pharmaceutical society of Great Britain, in Edinburgh on December 20th last, and reported:

"I have not yet had an opportunity of making an extended chemical examination of it, and a comparison of it with Spanish and Russian ergot, but preliminary experiments on a small sample show that it yields a large percentage of extractive to water, the actual percentage being 17.28.

"This is in excess of that yielded by the best Spanish ergot—which is a variety we usually employ for pharmaceutical purposes in preference to the Russian—although I have occasionally handled samples that yield as well; the majority, however, yield from 13 to 15 per cent.

"I hope during the course of the next few months to have the opportunity of converting the whole of the parcel, amounting to about 5 cwt., into ergotin, for which it is, in my opinion, admirably adapted on account of its pale colour.

"If the ergot should, on extended examination, present any special features, I will take the opportunity of putting the facts before you."<sup>1</sup>

*Ethyl Bromide* (hydrobromic ether), although still much used by surgeons for short minor operations, has not been alluded to in the medical journals throughout the year, except to simply express the satisfaction obtained in its use in selected cases.

*Ethyl Chloride* (muriatic ether)—the extremely volatile and inflammable anaesthetic liquid—still continues to be used in general surgery and dental practice to a limited extent. As a local anaesthetic only is it apparently at all efficient. Owing to its extreme volatility it has to be kept in sealed tubes with one end drawn out to a point, so that when the point is broken off the liquid is forced out by the heat of the hand in a small stream onto the part to be frozen.

Mr. Alfred Kebb, M. R. C. S., of York, England, reports the following results with it in hysterical aphonia:

"I have found the application of ethyl chloride to the nape of the neck most efficient in the treatment of this troublesome affection. It is applied suddenly, to the extent of making a frozen patch the size of a shilling, and repeated if necessary. It is useful, because more convenient than the application of electricity. The results in the two cases given confirm, I think, my opinion. The first case was that of a dark-complexioned young woman, of a

<sup>1</sup> Pharm. Journ., vol. II, Fourth Series, p. 546.

highly emotional disposition, who sent for me in consequence of being unable to speak above a whisper. As I was some distance from home and had no battery with me, it occurred to me to try the application of some chloride of ethyl. I applied it suddenly over the middle of the neck, with immediately favourable results. She had one or two relapses, but was always at once relieved by its application. So impressed was she with its efficiency that she asked for a flask of the chloride, and got a companion to apply it for her when necessary. The second case was that of a tall, highly nervous married woman about thirty-five years of age, who, after a severe domestic trouble, had completely lost her voice. One application to the nape of the neck quite restored the voice, which she has not lost since."<sup>1</sup>

Mr. A. E. Hind, F. R. C. S., of St. Heliers, Island of Jersey, reports the following case of its successful use in arresting instantly a haemorrhage after tooth extraction:

"A girl aged twenty years had a tooth extracted by a dentist at midday. She came to me at 10 o'clock at night, bleeding freely from the socket of a lower molar tooth. She said that the bleeding had been continuous since the extraction. Pressure and plugging with perchloride of iron had been resorted to without any result. Remembering a case that resisted all ordinary methods of treatment, I resolved to try freezing with ethyl chloride spray. After clearing out the clots, I found that ethyl chloride spray stopped all bleeding immediately. To prevent it recurring on thawing, I lightly plugged with wool soaked in tincture of hamamelis. Not another drop of blood escaped. There was no pain. Although ethyl chloride is much used for producing anaesthesia in small operations this suggests a further use."<sup>2</sup>

Dr. Szczypiorski, however, reports two cases of gangrene following its use in operations on the middle finger in which he used an Esmarch tube.

*Eucaïne* is a very recent synthetic compound produced by the chemist, which apparently gives great promise of being a very decided rival of cocaine as a local anaesthetic, with some marked advantages in its favour. Chemically, it is described as a methyl ester of benzoyl-methyl tetra-methyl- $\gamma$ -oxy-piperidin-carbonic acid, and surely the need of some short name was imperative. It is sparingly soluble in water, and, therefore, the hydrochlorate is used, which is readily soluble. Its advantages over cocaine are

<sup>1</sup> The London Lancet, vol. i for 1896, p. 161.

<sup>2</sup> The London Lancet, vol. i for 1896, p. 230.

that the heart is not affected; the pupils are not dilated or the accommodation affected; the anaesthesia lasts longer and is more general; an injection of 2 grammes (about 30 grains) is well borne; when applied to the cornea, it does not tend to produce, like cocaine, desquamation of the superficial epithelium; it is not decomposed by boiling, and therefore can be readily sterilised (cocaine splits up), and finally, it is somewhat cheaper. Its marked difference from cocaine is that it produces hyperaemia at the point of application, whereas cocaine produces anaemia. Therefore, whenever haemorrhage is to be guarded against, this agent would not be applicable.

Dr. Gaetano Vinci of Messina, Sicily, apparently was the first to experiment with this agent, and reported his results at the Hufeland Society of Berlin, Prussia, on April 16th last. Others soon verified his results, and now it has been tried by the ophthalmologists, laryngologists, and dentists with much success. The most stable solution appears to be 10 per cent.

Dr. E. Berger described its characteristic phenomena in ophthalmology at a meeting of the Paris Biological Society on May 30th last, as follows: "The patient feels a smarting sensation immediately after the application, which no doubt is severer than with cocaine. The tactile sensibility is the first to be lost, but is followed in a few moments by the loss of the sense of heat. The anaesthesia lasts not longer than eighteen minutes, during which time conjunctival hyperaemia and lachrymal hypersecretion are prominent. Neither mydriasis nor disturbances of accommodation have ever been noted. A mixture of equal parts (1 per cent. each) of eucaine and cocaine is said to prevent the conjunctival hyperaemia."

Dr. Robert Brudenell Carter, F. R. C. S., of Harley street, London, W., England, consulting ophthalmic surgeon to St. George's Hospital, has recently reported his first experience with this agent. He was led to its use particularly as Dr. Vinci had made the statement that it had no effect on the pupil, which seemed to him "of practical importance, because a dilated pupil is an impediment to the performance of many operations upon the eye. It has long been my practice to neutralise the dilating effect of cocaine by a preliminary application of eserine, but this course is not entirely satisfactory. It is difficult to secure the precise degree of effect which is desired, while the eserine dilates the vessels of the iris and occasions free bleeding when they are incised. It also renders the iris tissue comparatively rigid, so that it is less easily drawn out of the anterior chamber." Dr.

Carter used a 5 per cent. watery solution of the hydrochlorate for a cataract extraction on a woman patient, and relates his case as follows: "Before my arrival the nurse had applied a drop of the solution within the lower lid every five minutes for six times, and I found the eye perfectly insensitive. The pupil was unaffected and acted readily to light. There was scarcely any bleeding from the cut iris; there was a perfect quiescence of the muscles and there was no pain. I asked the patient whether she had felt anything and she replied, 'I felt something moving about my eye, but it did not hurt me.' There was no pain afterward, and healing was uninterrupted. I have since successfully used a single application of the same solution as a preliminary to the removal of a foreign body embedded in the cornea. In the original paper it is said that eucaïne has been successfully used in dentistry and laryngology, and that solutions may be injected hypodermically without injury. My first experiments will certainly induce me to use it again, and for tenotomies as well as for iridectomy or extraction. It is said that the solution above mentioned may be sterilised by boiling, again and again if necessary, without undergoing decomposition or suffering any deterioration of quality."

Professor Wolff of Berlin, Prussia, reports having made 128 successful tooth extractions under this anaesthetic. He found after trial that 0.3 cc. (about 5 minims) of a 10 per cent. solution was sufficient, as a larger dose may give rise to a swelling of the gums. Slight attacks of vertigo occurred in only two cases. He evidently prefers to use from 0.2 to 0.3 cc. (about 3 to 5 minims) injected at each root rather than a larger quantity for a series of teeth.

This agent has already been used to a limited extent with success in this country, and no doubt much more will be heard of it later.

"The ready solubility of cocaine hydrochloride distinguishes it at once from the eucaïne salt, which requires 9 parts of water to dissolve it. A fraudulent mixture of eucaïne with cocaine hydrochloride may be readily detected, according to Vulpius, by dissolving 10 centigrammes of the salt in 50 cc. of water and adding 2 drops of ammonia. If the salt of cocaine is pure, the solution remains bright, even if it throws down crystals, whereas in the presence of eucaïne a milky turbidity results. (This is similar to Maclagan's well-known test for amorphous alkaloids in cocaine chlorate.)<sup>1</sup>

<sup>1</sup> Pharm. Journ., vol. iii, fourth series, p. 251.



*Eucasin* is a new food compound, similar to nutrose, and obtained by passing ammonia gas over casein obtained from milk. It has been patented by Prof. E. Salkowski and W. Majert. A German observer, Dr. A. Cohn, who is one of the most recent observers of this proposed dietetic article, describes it as a slightly gritty, white powder, without any very decided taste, but having a slight odour of milk. It forms a clear white solution when shaken with warm water, but forms a gelatinous mass with cold water. It is apparently an acid ammonium salt of casein. It may be given in soups, chocolate, oatmeal porridge, ground rice, and the like. It should not be given with beer or wine. To a plateful of the cooked oatmeal or rice, Dr. Cohn adds a teaspoonful of eucasin and a little salt, which may be given two or three times a day. A Dresden, Germany, firm offers a preparation of chocolate containing 20 per cent. of eucasin. Dr. Cohn reports an outline of several cases of his, including pulmonary tuberculosis, laryngeal tuberculosis, anaemia, peritoneal irritation, typhlitis, parametritis, and perimetritis, in which he found considerable advantage derived from this nutrient, particularly in a case of acute anaemia following abortion. He has never discovered any disturbance of the digestion.

Professor Salkowski claims that eucasin has greater nutritive qualities than somatose, for the reason that it is more readily and completely absorbed.

*Euchlorine Solution* (the mixture of chlorine and chlorine dioxide gases in water) has not been reported on during the past year in the medical and pharmaceutical literature. It will be remembered it was extolled for the treatment of diphtheria.

*Eudoxin* was alluded to here last year under the head of nosophen, as it is the bismuth salt of nosophen. It is a reddish-brown, odourless, and tasteless powder, insoluble in water. It, however, dissolves readily in caustic alkalies, producing a violet-blue colour. Its use is confined, at least at present, to gastric and intestinal troubles, particularly in intestinal catarrh, where tuberculosis is present. In chronic inflammation, colic with tympanites, dyspepsia, and diarrhoea, it is reported of value. The dose for a two months old child is 32 milligrammes ( $\frac{1}{2}$  grain); for one four months old, 65 milligrammes (1 grain); for one year old, 97 milligrammes ( $1\frac{1}{2}$  grains); for an adult, from 260 to 390 milligrammes (4 to 6 grains), the doses in each case to be given three times a day. It is reported to have no toxic properties. As much as 3 granmes (46.3 grains) have been given daily without showing any deleteri-

ous secondary effects. The favourable results come chiefly from abroad, but it has now been introduced in this country and probably reports may be forthcoming.

*Europhen* (iso-butyl-ortho-cresol iodide)—the iodoform substitute, containing 27.6 per cent. of iodine—is still considered by some observers to be the best substitute now in use. Dr. Karl Kopp, of Munich, Bavaria, has recently reported his successful use of it in 19 cases of chancroids, 9 of inguinal bubo, and 7 of mucous tubercles in the genito-crural and anal regions. He, however, points out that all experience with it has been negative in the treatment of gonorrhoea. He considers europhen less irritating than any other odourless antiseptic, and is especially useful in venereal ulcers after scraping.

Dr. Edmund Saalfeld considers that his two and a half years' experience of successful use of this agent in the treatment of skin diseases warrants him in reporting his results and repeating the advantages others have already found over iodoform. Its slight saffron-like odour is not disagreeable; it is not toxic, and it is not an irritant to inflamed surfaces. It apparently proved most valuable in such superficial operations as the removal of skin tumors, circumcisions, and cauterisations. In varicose ulcers he used a mixture of two parts boric acid to one of europhen (Dr. Kopp also used boric acid in conjunction, but apparently for economical reasons only). In intertrigo of infants, a mixture of 5 to 10 per cent. of europhen with talc would prove effective when other remedies failed. In ulcerated gummata, the following ointment gave gratifying results:

Europhen . . . . .	3 to 6 parts.
Olive oil . . . . .	3 “
Lanolin . . . . .	30 “

*Exalgin* (methyl-acetanilid)—the analgesic—has not appeared in the medical or pharmaceutical literature of the year to any extent. Dr. I. Boas recommends cachets made according to the following formula for the treatment of pain associated with gastric ulcers:

Exalgin . . . . .	3,000 grammes (46.3 grains)
Extract of belladonna . . . . .	0.300 “ ( 4.6 “ )
Codeine phosphate or hydrochlorate . . . . .	0.300 “ ( 4.6 “ )
Milk sugar . . . . .	5.000 “ (77.2 “ )

divided into ten cachets, and one taken at each attack of pain.

For migraine, many practitioners have prescribed a tablespoonful three times a day of the following:

Exalgin . . .	0.060 grammes (about 1 grain )
Rum . . .	30.000 " ( " 1 fluid ounce)
Syrup . . .	30.000 " ( " 1 " )
Water . . .	120.000 " ( " 4 " )

*Ferratin* (acid albuminate of iron) has received more attention during the past year than was apparent during the previous one. Further experimental and clinical investigations have been reported both in the old country and in this. Professor Deutsch reports that he can now fully confirm—from a clinical standpoint—the results of Professors Schmiedeberg's and Marfori's experimental researches. He finds that the 7 per cent. of iron in ferratin approaches closely the iron found in the liver, and that given in ordinary chlorosis, with rest in bed and regulation of diet, it "acts as well as any other iron preparation; its power is most striking, however, in cases of gastric ulcer, in which the latter are either painful or ineffectual. Its influence is particularly seen in the increase of body weight, which is a better diagnostic guide than the mere counting of corpuscles. Its ready assimilability is well shown by its rapid action upon cases which have not yielded to treatment with inorganic iron salts. In pernicious anaemia and allied affections, ferratin is as useless as any other iron compound. It is, however, of the very greatest value in secondary anaemia." . . . He "concludes that ferratin is at least as valuable as any other iron preparation, and points out that it is the only one of which the physiological function and fate in the organism have been established from both the experimental and the clinical side."<sup>1</sup>

Others in Germany have worked in the same line, with about the same final results.

In this country, more clinical experience has accumulated and several writers have reported. Probably one of the most complete clinical reports has been made by Dr. George T. Richardson, of Cayuga, Ind., under the heading, "A Therapeutic Test of Ferratin,"<sup>2</sup> in which he relates his detailed notes on 5 cases, and concludes as follows:

"In a number of other cases similar to the last, with great debility, complete anaemia, lassitude, headache, insomnia, and pallour,

<sup>1</sup> Epitome Brit. Med. Journ., vol. i for 1896, p. 8.

<sup>2</sup> N. Y. Med. Journ., vol. lxiii, p. 512.

occurring in persons of different ages, I have found great benefit from ferratin, administered three times daily in doses ranging from 3 to 15 or even 20 grains. Yet, in my opinion, from the result of treatment in my more recent cases, no advantage is derived from larger doses than 8 grains, which may be taken three times daily, or oftener if deemed necessary.

"I regard ferratin as the most valuable of the iron compounds, from the fact that it is nutritious to the tissues, and rapidly builds up those cases in which there is apparently a lack of sufficient nourishment for the blood. It restores quietude and rest to the nauseated stomach, rapidly improves the appetite, adds colour to the skin and buoyancy to the spirits, and quickly brings about a state of good health. In two cases of chlorosis, ferratin was the principal agent in effecting cures.

"To small children I gave ferratin in milk or other liquid foods, and find it a grand nourishment and one especially indicated for such children as are deprived of their mother's milk and do not thrive well on the artificial products."

*Ferripyrin* (ferropyrin), the new haemostatic compound of last year, consisting of 64 per cent. antipyrin, 24 per cent. chlorine, and 12 per cent. iron, still receives attention and continues to give satisfaction, at least in the hands of those who choose to report their experience. Only two prominent observers, apparently, have thought well of reporting. Dr. Hans Degle, of Kindberg, Austro-Hungary, finds that it not only ameliorates the neuralgic pain of anaemic patients, but it appears to cure some forms of neuralgia which are independent of anaemia. He has obtained satisfactory results from a case of sciatic neuralgia, which would not respond to either electricity or large doses of antipyrin and phenacetin. He uses larger doses than others have used; a tablespoonful three times a day of a solution of 1 or 1.5 grammes (15.4 or 23.8 grains) of ferripyrin to 200 grammes (about 7 ounces) of water. He approves of Dr. W. Cubasch's combination, alluded to here last year, with pepsin and hydrochloric acid to facilitate its action in the digestive tract.

Dr. O. Schäffer recommends it as a reliable haemostatic for obstetricians and gynaecologists. Its particular uses are enumerated: 1. As a simple haemostatic in all haemorrhages from the genitals in which a cauterising effect is not desired. The effect is produced by a 16 to 18 per cent. solution on a sound covered with cotton-wool. 2. Given in vaginal and intra-uterine douches by means of a Fritsch-Bozeman's double-channeled catheter. 3. Ap-



plied in a powder to stay the profuse haemorrhage of cervical cancer, especially where destructive ulceration is present. 4. Injected safely in a powder into the bladder in haematuria, when from a 1 to 16 per cent. solution should be used, according to circumstances. 5. It may be given by the mouth in all stomach or intestinal haemorrhages, as in the malaena of the newly-born infant.

*Ferrostyptin* is the name given to a new antiseptic and hemostatic to replace solid chloride of iron. Its composition is not known exactly as yet except to its introducer, Dr. Eichengrun, but it appears to contain 20 per cent. of iron, ammonium chloride and apparently some acetanilid. It is a reddish yellow crystalline powder, with a peculiar odour resembling phenol, and with a sharp saline taste. It melts at  $112^{\circ}\text{C}$ . ( $233.6^{\circ}\text{F}$ .). It is readily soluble in water, but sparingly so in alcohol, ether, and acetone. Its solution coagulates on heating to the boiling point. It is reported of value in general surgery, gynaecology, and dentistry, but there are no definite reports as yet.

*Fluorol* is the short name which has been adopted for sodium fluoride. Dr. Duclose has recently reported that it is superior to the ordinary antiseptics. He finds it less toxic than corrosive sublimate, copper sulphate, or carbolic acid. It may be used in 1 to 30 or 1 to 100 solutions with benefit, and without any untoward effects when applied to the skin, mucous membranes, wound dressings, etc. He has used a 1 to 200 solution with success in the treatment of 8 cases of cystitis of the lachrymal sac. No other observers have yet reported on this agent.

*Formalin* (40 per cent. solution of formaldehyde) has received very marked attention during the past year, and much has been written upon it. As it is now becoming such an important article, and evidently has come to stay, it may be well to recall here that it is most effectively and economically prepared by passing a current of air saturated with methyl alcohol over a spiral coil of platinum brought to a high heat. The vapour thus split, after being condensed, proves to be a solution of the aldehyde in methyl alcohol.

Its antiseptic, disinfectant, and bactericidal properties are still more strongly confirmed than last year. Mr. F. C. J. Bird read a paper at the thirty-third annual meeting of the British Pharmaceutical Conference held in Liverpool last July (*Pharm. Journ.*, Vol. III, Fourth Series, page 269), in which he very forcibly pointed out its preservative properties, and elicited an interesting discussion. The absence of odour and freedom from any taste when in weak solution, together with its lack of poisonous effects and ready

volatility, continue to be emphasised. The effective combination with gelatin was brought out in the discussion. This combination will be referred to under its proper head of glutol.

Further experiments with it as a preservative of food products give increased satisfaction, but certain precautions evidently have to be taken. In histological work, and the preservation of marine animals, it has given fairly good results so far. The loss of the natural colour in objects takes place finally, just as completely as with alcohol, but much more slowly, so that a more or less prolonged investigation may be undertaken before the specimen is marred to that extent. It is a much less expensive article than alcohol.

Mr. F. Lester reports that this agent is an excellent preservative for ointments. He met with marked success with a proportion of 7.5 grammes (about 2 drachms) to 450 grammes (about 1 pound) of lard. Like proportions were used in zinc oxide ointment in comparison with benzoic acid as a preservative, with the decided advantage in favour of formaldehyde. He also found it of great service in mucilages and pastes. One per cent. of formaldehyde to the officinal mucilage of acacia showed no signs of fermentation in the latter after being exposed to a warm temperature for two months. Flour, starch, and dextrin pastes gave equally good results.

As a fixing and hardening agent it is now well established, for it will harden any tissue placed in it for a few hours.

Dr. H. A. L. Ryfkogel, of San Francisco, Cal., Curator of the Medical Museum in the University of California, has written an instructive article on "Formalin as a Preservative" (*Medical Record*, Vol. 50, page 192), in which he points out its advantages over alcohol, and introduces the subject as follows:

"To find an ideal preserving fluid has long been the aim of those taking an interest in the care of specimens of organic life.

"Such a preservative must not alter the preparation in any way; it should cause no shrinkage nor hardening; the colour of the object ought not to change; the microscopic as well as the macroscopic appearance must be preserved; the fluid should be non-inflammable and obtainable at but little cost. As yet no combination has fulfilled all these indications, nor is it likely that any ever will; for preserving fluids are usually such by virtue of one of these very objections, if such it really be, namely, the hardening of albuminous material.

"Of necessity, all preserving fluids must have antiseptic qualities, and many such, as alcohol and glycerin, are hygroscopic as well.

This last quality is of course not an advantage, owing to the great shrinkage that occurs on the withdrawal of any water from animal tissues. It is by the presence of these qualities that we must judge the value of the different media in use. Thus, solutions of boric acid, four per cent., or carbolic acid, one to two per cent., are simply antiseptic. Any object placed in these will indeed not suffer putrefactive changes, but after a time will become macerated and practically worthless. Glycerin is hygroscopic and slightly antiseptic. It alters by shrinkage, and is too costly for ordinary use. Alcohol is hygroscopic, antiseptic, and coagulates albumen. It therefore both hardens and shrinks the specimens. It also alters by dissolving out many of the organic pigments.

“Finally, solutions of formic aldehyde are antiseptic. They harden albumen, but cause no shrinkage, and affect animal pigment but slightly.

“Of course all fluid preservatives alter the appearance of tissues to a certain degree by the withdrawal of blood.”

Encouraging results have been obtained in sterilising catgut by soaking it for twelve hours in a 5 per cent. solution of formalin. This does not itself destroy the germs, but it so hardens the gut that it may be boiled without harm for fully twenty minutes. It may then be kept ready for use under a 1 per cent. solution of corrosive sublimate solution. To avoid kinking, Prof. Hoffmeister recommends winding the gut on glass plates rather than spools before immersing in the formalin solution, and after the treatment is accomplished thorough washing in an abundant supply of running water is requisite.

Much satisfaction has been obtained in disinfecting by means of the vapours of this agent. Three French observers, G. Roux, A. Trillat, and Dr. F. J. Bosc, have experimented in this direction, and have made two separate reports. The experiments of the first two observers “were conducted in rooms whose cubic capacity varied from 70 to 1,400 c. m. The destruction of pathogenic germs was absolute even in the room of the larger dimensions. The sterilisation of the air dust and of the walls may be considered as practically perfect, the aldehyde vapour acting almost instantaneously and simultaneously in every part of the room. No danger of poisoning with carbonic oxide is incurred, although the irritating nature of the gas renders it incumbent on the manipulators to prevent its escape into the neighbouring rooms. M. Bosc states that the dry vapours of formaldehyde destroy after an exposure of five hours’ duration all pathogenic micro-organisms existing on dry squares of

linen, the presence of a little moisture not having an appreciable retarding effect. The spores of pathogenic fungi are likewise destroyed if they be dry. The only germs that resist are the bacillus subtilis (of hay) and the bacillus mesentericus, neither of which possesses any practical importance. When contact with the vapour is difficult the result is precarious. Thus, of two specimens placed in a coat pocket whose flap had been turned down one (the staphylococcus) was killed, whereas the other (bacillus coli) survived and furnished a weak culture in five days. The staphylococcus and the charbon bacillus survived exposure to the vapour when placed inside a heap of sheets and in the thickness of a mattress respectively.

"The wool of this mattress yielded a culture of the streptococcus. Germs placed on a mattress simply doubled on itself were, on the contrary, killed. Moist specimens were also killed when perfect access of the aldehyde vapour was ensured. Of some such moist specimens exposed in test-tubes, some were destroyed and others escaped. Koch's bacillus tuberculosis contained in dry sputa or in sputa triturated with sterilised sand was killed, and even fresh sputum spread on linen to a thickness of one or one and a half millimetres was disinfected. It is evident that the freer the contact of the aldehyde, the more complete is the disinfection. Quilts, sheets, curtains, etc., to be disinfected should, therefore, be hung on lines, pockets should be turned inside out, and woolen mattresses unsewn. After the disinfecting process is over, the windows are widely opened. A quarter of an hour later, the room can be entered (the windows being still open). After two days of thorough ventilation, the room is odourless and habitable. The formaldehyde does not deteriorate or decolourise any object. Formaldehyde generators are sold in Paris in the form of lamps. I had one in use in a furnished apartment the other day in a case of chicken-pox, the result being quite satisfactory. I would strongly recommend this method in preference to the old sulphur plan."<sup>1</sup>

Professor Robinson, in reporting the results of his tests of this agent as a disinfectant to the Maine state board of health a few months ago, exhibited a lamp of his own construction to produce the vapour. It "consists of a cylinder into which wood alcohol is continuously fed from a tank similar to that of a German student's lamp. In the top of the cylinder is fitted a diaphragm of copper gauze consisting of two layers between which is a layer of especial material. Upon the application of gentle heat to the gauze, the alcohol below begins to vapourise and change into formic aldehyde,

<sup>1</sup> The London Lancet, vol. i for 1896, p. 1678.



a gas having the germicidal properties of sulphurous acid gas, but in a greater degree. The vapourisation progresses as long as alcohol is supplied."<sup>1</sup>

Mr. Elmer Grant Horton, B. S., working in the laboratory of hygiene of the University of Pennsylvania, has written a very interesting and instructive article on "The Disinfection of Books by Vapour of Formalin,"<sup>2</sup> in which he states that the questions presented are :

"1. Can books, under simple conditions, be disinfected by the vapour of formalin ?

"2. What is the maximum amount of air per c. c. of formalin that may be used and yet the books be sterilised in a limited time—as twenty-four hours ?

"3. Will a shorter exposure than twenty-four hours suffice ?

"4. Will an increase in the length of time of exposure counter-balance a decrease in the amount of formalin employed ?" . . .

His conclusions are:

"1. Books can be disinfected in a closed space simply by vapour of commercial formalin by using 1 c. c. of formalin to 300 c. c. or less of air.

"2. The vapour of formalin is rapid in its disinfectant action. The effect produced in the first fifteen minutes is practically equivalent to that observed after twenty-four hours.

"3. An increase in the amount of air to each c. c. of formalin is not counterbalanced by an increase in the length of time of exposure.

"4. In case the disinfection has been incomplete, the vitality of the organisms has been so weakened that they survive only if transferred in a few hours to media suitable for their development.

"5. The use of vapour of formalin is not detrimental, as far as observed, in any manner to the books, nor is it objectionable to the operator beyond a temporary irritation of the nose and eyes, somewhat similar to that produced by ammonia."

At the medical congress recently held at Frankfort, Prussia, Dr. Rosenberg of Berlin described his experiments with two new combinations of formaldehyde, a simple alcoholic solution called "holzine," and then a combination of this with menthol, called "holzinol," both of which proved to be powerful antiseptics and killed the spores of anthrax bacilli. "The vapour of holzine is specially

<sup>1</sup> Journ. Amer. Med. Asso., vol. xxvii, p. 765.

<sup>2</sup> Med. News, vol. lxi, p. 152.

valuable for the disinfection of rooms. It is beneficial, also, in whooping-cough, and diminishes the respiratory embarrassments which accompany phthisis. An aqueous solution of holzine may be advantageously used for cleaning the floors of rooms which have been occupied by cases of contagious illness. Articles of food, such as meat, eggs, bread, and potatoes, which have been exposed to the vapour and subsequently covered with a thin layer of holzine gelatin, will keep good for several months. Dr. Gottstein, who had likewise endeavoured to preserve food by exposure to the vapour of formalin and subsequent coating with formalin gelatin, states that he succeeded in avoiding putrefaction, but the articles so treated became hard, like stone, and therefore useless."<sup>1</sup>

Dr. George C. Freeborn of New York read an interesting "Résumé of the Uses of Formalin"<sup>2</sup> before the New York Pathological society on March 23d last, giving quite a complete bibliography of the subject, which may be of value to those who desire to look up the history of this agent.

The use of this agent in eye surgery cannot be regarded as a novelty at this time, for Mr. Sydney Stephenson of Hanwell, London, W., England, points out that as long ago as May, 1893, it was made the subject of a communication to the Société Française d'Ophthalmologie by Valude, who used both a 1 in 100 and a 1 in 2,000 solution, but it has recently attracted much more attention in ophthalmological practice, both in the old country and in this.

The report made by Mr. James Mackenzie Davidson, M. B., C. M., surgeon to the Aberdeen Ophthalmic Institution, Scotland, will probably give the fairest conservative account of its benefits in this specialty of medicine that will be found at this time. He states: "The results I have obtained with this substance in the treatment of some diseases of the eye have been so notable that I am induced to publish this short article upon its use. One part of formalin in 2,000 or 3,000 of water is the strength of the solution which I find most serviceable. When I tried it first in hypopyon ulcers, it was dropped into the affected eye three or four times daily, and it seemed to be of very little use, but on applying it freely every hour, I have never seen anything act so effectually in these cases.

"Every one engaged in ophthalmic work in a manufacturing town knows how numerous and troublesome, and indeed often

<sup>1</sup> The London Lancet, vol. ii for 1896, p. 1197.

<sup>2</sup> N. Y. Med. Journ., vol. lxiii, p. 770.

disastrous, are the cases of septic abrasions of the cornea ending in hypopyon ulcers. The granite and engineering works in Aberdeen give us ample experience in this kind of cases.

"The usual antiseptic applications so often fail to benefit such injuries that recourse has to be had to the electric cautery, and if this is to be thoroughly effectual, the focus must be burned out completely, and consequently more or less of sound corneal tissue is destroyed as well, and, while the scar left is frequently wonderfully slight, still no one can doubt that if the process can be at once arrested by local antiseptic applications, the results are even better.

"My experience warrants me in claiming that in a solution of formalin, 1 in 2,000 or 1 in 3,000 applied every hour freely we have such a substance, and it would be of interest to know if others come to the same conclusion. Used in the same way, or less frequently as experience may dictate, it acts admirably in abrasions of the cornea which have become septic and infiltrated, and might or might not go on to suppuration. Another great advantage is that the severe pain so characteristic of hypopyon ulcer is speedily relieved by the formalin solution, which further is non-poisonous and produces no irritation in the strength recommended. The directions I give to the patient are to lie down, and then with a dropper, or failing that, a teaspoon, the formalin solution is poured gradually into his eye, while the eyelids are kept winking, so that its surface will be freely bathed; this being done hourly during the day, and at night also should the patient happen to awake." He then cites his last four cases as instances, and concludes:

"One is always afraid in advocating the use of a comparatively new drug that one's judgment may insensibly become unduly biased in its favour if it acts at all well, but I have used formalin now for some months, and have had the opportunity of having the opinion of fresh and impartial observers familiar with the usual methods of treatment and results, and without exception a most favourable opinion has been formed of its value, especially in septic abrasions and hypopyon ulcers, provided it be applied freely and frequently, not less than hourly in severe cases. Atropine is only used sufficiently to keep the pupils dilated in these cases. Since using formalin in this way I have not had to use the electric cautery once. Of course there are cases in broken-down subjects, and those that are too late in seeking advice, where suppuration of the cornea may not be arrested by any means, but I consider that

formalin should have a fair trial, even in such, and supplement operative treatment.”<sup>1</sup>

Dr. Alfred Salter, house physician in Guy's hospital, London, Eng., reports<sup>2</sup> his gratifying results with this agent in the treatment of forty cases of ringworm of the scalp, in the out-patient department, in which he used the full strength of forty per cent. “The fluid was vigourously rubbed in with a largish brush or mop for ten minutes, the hair having been shaved round the margin of the patches. The application was repeated every other day on four occasions and then entirely discontinued. In some patients the head was painted every day for four successive days. Of the forty cases only five required repainting from non-eradication of the disease, and in these the fault lay not with the remedy, but in the fact that, owing to the struggles of the child, no proper application could be made. The ages of the children treated ranged from four to twelve, and the extent of the disease varied from a small strictly localised patch to areas which were practically co-extensive with the whole scalp. Microscopical examination was always made before commencing the treatment, and the actual presence of the trichophyton verified, whilst before pronouncing any case cured microscopical examination was again made. In thirty-eight of the cases the fungus presented the characters of trichophyton microsporon.

“Formalin thus applied induces discomfort and irritation of very brief duration rather than actual pain, and does not vesicate the scalp as it does the skin elsewhere. Only three cases showed any suppuration after its use, and in these the process was slight, and did not destroy any of the follicles. It produces, however, a thick crust, just as weaker solutions cause desquamation upon the skin of the arm, and the subsequent application of some emollient is advisable to accelerate the removal of this exudation. Growth of healthy hair commences immediately, and in three or four weeks the denuded patch is covered with hairs one-sixth inch long.

“Before concluding, allusion must be made to a remarkable occasional complication of the treatment. In six cases oedema of the face was noted some hours after the painting. In one boy this was so extensive as to completely prevent vision from swelling of the eyelids, and the forehead pitted one-half inch on pressure. The skin, however, was neither hot nor red, and there was no pain

<sup>1</sup> Brit. Med. Journ., vol. ii for 1896, p. 144.

<sup>2</sup> Brit. Med. Journ., vol. ii for 1896, p. 650.



or constitutional disturbance. The oedema only occurred when the area treated was very large, and the condition is probably analogous to that produced by a nettle sting on a big scale.

"It is interesting in this connection to remember that the active toxic agent in the nettle is formic acid, and that it is thus closely related to the substance now under discussion. The occurrence of this oedema renders it advisable either to deal with limited areas at a time, or to warn the parents of the possible result if the whole scalp is to be attempted at once."

Dr. Gonin, of Lyons, sends a note to the Paris Academy of Medicine, recommending formol (formalin) for mosquito and gnat bites; also for bites from small animals. The bites should be covered with formol by a small brush or the surface of the cork of the bottle containing it. After evaporation, the formol is again applied. The soothing effect is instantaneous; there is never any inflammation. Dr. Gonin asserts that formol is efficacious for serpent and scorpion bites. Dr. Henry Liston, of Sunderland, Eng., testifies to its efficacy as an antidote for these pests, and relates his experience in Paris, from which he suggests its use in countries where the mosquito is a plague. His recollections refer to the Zanzibar coast, where he states he "had many opportunities of seeing and personally experiencing the results of mosquito bites, for which there was no remedy such as formol. Formol is one of the aldehyde series, and is a transparent liquid with a pungent odour. It ought to be used with caution, as the odour is very irritating to mucous surfaces. It should be applied to the bites as soon as possible with the cork of the bottle, and allowed to dry on. On my arrival in Paris I was severely bitten, as were other residents in the hotel. The manager informed us that they used formol as an antidote. I was very skeptical as to its action, but obtained some, and after applying it to the bites I can only give formol the highest praise in acting as an antidote for mosquito bites."<sup>1</sup>

Mr. E. Merck, of Darmstadt, Germany, offers a patented combination of aloin with formalin, which is found to be so insoluble that the aloin is practically without taste. It is not yet reported whether the aloin is not so closely combined that its effects are interfered with. He obtains this combination as a condensation product after treating a mixture of water, formalin, and aloin with sulphuric acid. This aloin product separates in yellow, flocculent particles partially resinified. Of course it is washed free from all sulphuric acid.

<sup>1</sup> Brit. Med. Journ., vol. ii for 1896, p. 1082.

At the Twenty-third Congress of the German Surgical Society, Dr. Rotter reported the following as an efficient application for the treatment of eczema:

Formalin . . . . .	1 part.
Zinc oxide . . . . .	100 parts.
Powd. talc . . . . .	100 "
Vaseline . . . . .	200 "

In the treatment of soft chancre this agent has proved as efficient as carbolic acid. The pain caused is often severe, but lasts a very short time. In about twelve hours the chancre becomes perfectly dry and as hard as if frozen. One application, using a cotton wad on the end of a probe, is generally sufficient if the ulcer is shallow. If deep, however, only one more application appears to be necessary and that two or three days later.

Urethral blennorrhagia, acute, chronic, and gonorrheal cystitis have responded well to this agent. A one per cent. solution is recommended for washing out and a five per cent. solution for more direct and prolonged action upon the bladder and urethra. The best results in the above three forms of cystitis have been obtained in the chronic. In tubercular cystitis, however, the most uniformly good results are reported.

*Formopyrin* is the name given to the new combination of formal and antipyrin which is predicted to act as an antipyretic, anodyne, and antiseptic. Equal molecular proportions of the two ingredients dissolved in water and mixed are allowed to stand from eight to ten days, when, according to Professor Marcourt, this compound is formed in definite crystals which are recrystallised from alcohol. It melts at  $142^{\circ}\text{C}$  ( $287.6^{\circ}\text{F}$ .), is insoluble in cold, and sparingly soluble in hot water, insoluble in ether and benzol, but soluble in alcohol, chloroform, and acetic acid. It acts as a base in forming stable combinations with acids. There have been no clinical reports made as yet.

*Gallicin* (the methylic ether of gallic acid)—analogous chemically and in its uses to resorcin and pyrogallol—has not been heard of in the medical and pharmaceutical journals of the past year.

*Glutol* is the short name given to a combination of formalin and gelatin which has come rapidly into prominence during the past year as a very satisfactory antiseptic agent of special value to the surgeon. It is prepared by adding to a warm aqueous solution of gelatin, 2 per cent. of formalin, when, after stirring, the combina-

tion is complete, resulting in a transparent mass, with a glassy lustre. It is capable of being reduced to a fine powder, which is the form usually presented to the surgeon. Under ordinary conditions it is an inactive, stable compound, insoluble in water, acids, or alkalies, but when in contact with the animal tissues, it is found to gradually decompose. The formalin thus set free acts continuously as an effective antiseptic.

Dr. C. L. Schleich, of Berlin, Prussia, has apparently made the most thorough investigations with it, and has reported his results in full. Completely successful results have been observed in 120 cases of acute suppuration, 93 of simple aseptic wounds, 4 of compound fracture, and 2 of deep wounds of the scalp. The decomposition of the glutol is found to be too slow, however, in most cases of old gangrenous wounds and varicose ulcers, so Dr. Schleich recommends the use of a few drops of the following solution to be poured over the layer of glutol as applied, which will dissolve up the gelatin more rapidly and thus set the formalin free:

Pepsin . . . . .	5.000 grammes (77.2 grains)
Hydrochloric acid . . . . .	0.300 " ( 4.6 " )
Distilled water . . . . .	100.000 " (about 3½ f ¾)

Glutol is found to be free from toxicity, and therefore the veterinary surgeons find it invaluable, for the animals are not affected if they lick the sore. The firm scab formed by the glutol itself renders a protecting bandage unnecessary. Another satisfactory feature is, that itching does not accompany its use throughout the whole process of healing.

It has been suggested to make capsules of glutol for administering such drugs as are intended to act on the small intestine, for it is found to be readily soluble in the pancreatic fluid, but only sparingly so in the gastric juice and bile.

Before powdering, glutol is capable of being moulded by heating into almost any shape, and therefore it has been recommended in plastic surgery for filling up all kinds of defects. Professor Gottstein has formed artificial bone experimentally by combining glutol with some calcium salts, and thus producing a mass which can be molded between the ends of a resected bone, producing a firm, fibrous, calcified tissue, continuous with the true osseous tissue.

The future of this agent is thus seen to be very promising and far-reaching.

*Guaiacetin* is a new compound offered as a substitute for creos-

sote and guaiacol in the treatment of pulmonary tuberculosis. It is described as being a powder without disagreeable taste or smell, obtained by the introduction chemically of the radicle CO in the methyl group found in the composition of guaiacol, thus forming what may be chemically termed a pyro-catechin-mono-acetate.

Dr. J. Strauss, of Frankfort-on-the-Main, Germany, appears to be the only prominent observer who has thus far reported. He has administered it in the Municipal Hospital of his city to 70 patients suffering with pulmonary tuberculosis, in 500 milligramme (7.7 grain) doses, repeated several times a day. It was apparently better borne than creosote, and had certain other advantages over it, but as other therapeutic measures were employed in these cases no definite report could be properly made as to its action upon the lesions.

Possibly further reports may be forthcoming.

*Guaiacol*, obtained either from beechwood and other creosotes, or synthetically, continues to receive marked attention. Most of the results reported are favourable. As an external application, it has been used with satisfaction not only in acute pulmonary tuberculosis, as before noted, but in tubercular ascites and tubercular peritonitis in conjunction with tincture of iodine. Injections in articular tuberculosis have also proved of value. A 20 per cent. solution is injected into the periarticular tissue, as well as into the intra-articular growths.

Professor Maldaresco has treated 100 cases of pneumonia by spraying an almond-oil solution of guaiacol externally on the posterior aspect of the thorax on the affected side.

Both guaiacol and its carbonate have continued to be used with claimed success in typhoid fever, lobar, lobular and broncho-pneumonia, pulmonary tuberculosis, and other febrile affections—the former topically, the latter internally. Topically and hypodermically, it still gives satisfactory results in sciatica and other forms of neuralgia.

One of the most interesting papers of the year on this subject is that of Dr. J. G. Sinclair Coghill, F. R. C. P., of Ventnor, on the Isle of Wight, entitled “The Hypodermic Use of Guaiacol in Acute Pulmonary Tuberculosis,”<sup>1</sup> read at the annual meeting of the British Medical Association, held in London in July, 1895, in which he gives the clinical history of 7 cases as having “all been previously treated by the several internal remedies on the principles just described, but without any favourable effect on the pyrexia

<sup>1</sup> Brit. Med. Journ., vol. i for 1896, p. 586.



or other symptoms. The comparatively small dose necessary to employ in this form of medication is noteworthy.

"In many of the cases in which the treatment was carried out, the injections were persevered in for some time before any impression was produced on the temperature. It will be observed that the fall of temperature is comparatively gradual, and very rarely falls to subnormal. This valuable property of guaiacol, which especially distinguishes it, was first observed by Dr. Schetelig. In correspondence with the falling temperature, improvement almost invariably takes place in the other symptoms, especially marked in diminished cough and expectoration, and increased appetite and weight. A moderate warm perspiration, which usually follows the injection at a variable interval, very soon takes the place of the regular hectic night sweats. I have usually continued the exhibition of the remedy by the mouth at the same time, not only to aid in the saturation and probable sterilisation of the blood, but because pure guaiacol seems to check the decomposition of food in the *primae viae*, which the notoriously enfeebled digestion of phthisical patients so readily permits. As I have already said, it is only in comparatively rare cases that guaiacol given by the mouth, even in the largest and frequently repeated doses, influences the temperature of acute pulmonary tuberculosis when of high intensity, whereas a daily inoculation of from *m i j* to *m v* in a very large proportion of cases reduces it gradually and permanently. . . .

"The observations recorded in the series of cases I have submitted justify, I believe, the conclusion that in small doses, administered subcutaneously, guaiacol by itself succeeds frequently in reducing the temperature and relieving the objective symptoms satisfactorily and often permanently in acute pulmonary tuberculosis, when it and other accredited antipyretics have failed when exhibited by the mouth. This marked difference in effect may be due to changes effected in the nature and properties of the drug during the digestive process. The fact is that guaiacol is of extremely unstable organic constitution, and its true chemical composition has probably not yet been satisfactorily determined."

Dr. G. Colin reports satisfactory results from the injection of a 20 per cent. solution of guaiacol carbonate in olive oil in chronic cystitis. One to 2 grammes (15.4 to 30.9 grains) injected once or twice a day through the urethra has a marked influence on the pain, frequency of micturition, and general condition of the urine. Particularly gratifying results followed in treating tubercular cyst-

titis when 1 per cent. of iodoform was added to the injecting solution.

As a local anaesthetic, it has gained many advocates. The claim last year that it is as powerful as cocaine is still maintained with some quite convincing evidence.

Dr. J. Petrasko reports a case of abortion occurring from the use of this agent in a woman twenty-nine years old, after having taken a total of 775 milligrammes (12 grains).

*Guaiacum* has received a renewed impulse in relation to its use in the treatment of chronic gout, by reason of the interesting discussion on this topic in the Royal Medical and Chirurgical Society of Great Britain, held on May 26th last, when Sir Alfred B. Garrod introduced the subject by reading a paper on "The Use of Guaiacum in the Treatment of Chronic Gouty Affections, and its Value in Warding off Acute Attacks."<sup>1</sup> "After speaking of numerous observations carried on for very many years among both hospital and private patients with guaiacum, both in the form of a powder and as an ammoniated tincture of guaiacum, Sir A. B. Garrod thought that he had been successful in establishing the following points in regard to the action of guaiacum :

"1. Guaiacum was innocuous, and might be taken for an indefinite period of time, and, looked upon as a condiment rather than as a drug, as harmless as ginger or any other condiment.

"2. Guaiacum possessed a considerable power, but less than colchicum in directly relieving patients suffering from gouty inflammations of any part; it might be given whenever there was but little fever.

"3. Guaiacum taken in the intervals of gouty attacks had a considerable power of averting their recurrence; in fact, it was a very powerful prophylactic.

"4. Guaiacum did not appear to lose its prophylactic power by long-continued use.

"5. There were a few persons who could not readily continue the use of guaiacum; for such cases there were other drugs whose action was, in some respects, similar as prophylactics—perhaps serpentaria was one of the most powerful of these.

"Sir A. B. Garrod gave a short account of serpentaria, and mentioned the fact that he had given it successfully in gouty inflammation in the elderly subject; as a prophylactic, he had less personal experience, but he doubted not that it was possessed of considerable power. Before attempting to explain the mode of

<sup>1</sup> The London Lancet, vol. i for 1896, p. 1494.

action of guaiacum in the treatment of gout, he gave his view of the origin of uric acid in the animal economy; instead of supposing that it was formed in the system by the metabolism of the nitrogenised tissues, and then thrown out by the kidneys, he was of opinion that it was produced from urea and other nitrogenised bodies in the blood by the direct action of the kidney, and that when uric acid was contained in the blood, this arose from the absorption from the kidney structures of the urate of ammonium, depending on the want of sufficient throwing-off powers from these tissues. He was aware that it was from his own discovery of uric acid in the blood that the opposite view of the formation of uric acid arose. To explain the prophylactic action of guaiacum he did not think that it affected the formation of uric acid, but that it acted directly on the kidney itself, as a stimulant, and enabled it to get rid of any accumulation in the tubules and thus prevented absorption from them into the blood. In confirmation of this view, it was found that patients when taking guaiacum often had unusual deposits of urates in their urine. The paper closed with the following remarks: 'If the statements contained in this communication had the effect of inducing his medical brethren to direct their attention to the value of guaiacum in the treatment and prevention of gout, he felt he should have conferred some benefit on the profession and through them on the public at large.'

The discussion was then opened by Dr. Norman Moore, who said that Sir A. B. Garrod was the first to lay down the definite knowledge which enabled physicians to say for certain, post mortem, that a given patient had or had not suffered from gout. At St. Bartholomew's Hospital a very large number of cases of gout were met with, possibly because they were close to the Central meat market. He had seen at least 100 instances, post mortem, of persons displaying the features in morbid anatomy which Sir A. B. Garrod had shown to belong to this disease. Colchicum might be given for long periods with advantage and some success in warding off the attacks. Though some of the success might be due to care in diet he did not think it was entirely due to this, because persons who suffered from the most inveterate gout passed through fewer attacks when taking small doses of colchicine over long periods. He asked Sir A. B. Garrod what was the true history of the reputation of guaiacum in former times. At the earlier part of the seventeenth century guaiacum was extolled as the most successful remedy for what we should call tertiary syphilis. He wondered if its reputation was due in part to its effect on sore throat or perhaps part of the pain that the patients

suffered was gouty. Indeed, it was possible that guaiacum was successful in postponing or altogether preventing further attacks of pain which were not really syphilitic but gouty.

Dr. R. A. Caldwell, of New York, held that "poor man's gout" required a different treatment from "rich man's gout," the former requiring stimulants, and he advocated "sweating it out." He asked Sir A. B. Garrod if it were not possible to secure the elimination of the *materies morbi* at the site of its deposit.

Dr. Wm. Murrell said that he could support Sir A. B. Garrod's conclusions as to the efficacy of guaiacum in chronic gout. He had used guaiacum during the last six years at Westminster Hospital, not only for chronic gout, but for rheumatism, tonsillitis, and chronic bronchitis, associated with the gouty taint. The Throat Hospital lozenges he had found useless, because the dose was too small and lozenges were too expensive for out-patients. The taste of the mixture of the British Pharmacopoeia was so atrociously nasty that patients declined to take it. The tincture was difficult to dispense because it did not mix with water, and so he made a confection containing ten grains in a drachm of honey, the patient taking one or two drachms three times daily immediately after meals. Though this was efficacious, yet it presented disadvantages, for it acted as a powerful purgative and brought out a rash like that of a copaiba, but not attacking the face; it was accompanied with much itching. The drug sometimes caused burning feelings in the throat, with a sensation of constriction, but this was overcome by giving the resin with half an ounce of extract of malt. He had also given it mixed with an equal amount of confection of sulphur. Though he had come to the same conclusion as Sir A. B. Garrod, he felt he had been working on different lines, for he had made use of guaiacum resin; he had given it alone instead of in combination with cinchona, iodide of potassium, or colchicum; he had given it also in much larger doses—namely, twenty grains of the resin three times a day, the resin being of about four times the strength of guaiacum itself. He had not given guaiacum in cases of acute gout, but he had given colchicum wine with iodide of potassium three times daily. Recently he had used a liniment whose composition he afterwards gave as follows: "I take half an ounce of iodide of potassium, dissolve it in half a pint of rectified spirit—methylated spirit is used in hospital practice—add one ounce of soap liniment, and then half a drachm each of oil of cajeput and oil of cloves. A piece of lint is soaked in this mixture, wrapped round the affected part, covered with protective, and kept in place by a bandage. It acts as



a powerful counter-irritant, and the inflammation usually subsides in from twelve to twenty-four hours. In addition, I not uncommonly give a drachm of colchicum wine with ten grains of iodide of potassium three times a day. These large doses of colchicum wine induce brisk purgation, sometimes accompanied by vomiting, but they speedily cut short the attack. This mode of treatment is especially useful in the case of robust, full-bodied men in active employment, to whom the loss of a day's work is a serious consideration. In sciatica, lumbago, and rheumatism affecting one joint, the local application of a liniment containing half an ounce of salicylate of sodium, half a drachm of oil of cajeput, fifteen minims of oil of eucalyptus, and half an ounce of soap liniment in six ounces of rectified spirit affords prompt relief."

Dr. Haig next continued the discussion, and said that while he agreed that guaiacum tended to ward off gouty manifestations, he did not concur as to the way in which the drug acted. Iodide of potassium provoked diuresis and dilatation of all the blood-vessels, with a fall of blood pressure. Lithia and ammonia had a similar action, as also had copaiba, tar, cannabis indica, certain salts of calcium, and certain bitters, such as chiretta, gentian, and possibly serpentaria. Copaiba contained a large quantity of acid and guaiacum agreed with it in this. He believed that all these drugs diminished the excretion of uric acid and kept the blood clear of it, and he explained fully elsewhere the method of action of some of those drugs. He was interested in what had been said about the effects noted by Cullen and other physicians of his time, because it agreed with his view that these drugs suppressed gout, but did not cure it. He accepted the view that urate of ammonia was not formed from urea in the kidneys, but that the reverse took place. Much of the uric acid met with in disease was not formed in the system, but was introduced with animal food.

Dr. W. Ewart said that he had been in the habit of giving guaiacum in conditions akin to gout, and he had been struck by the effect which it exerted upon the condition of the patient. He thought that the action of guaiacum upon the capillaries was not limited to the kidney, but extended to the whole system, and in particular to the capillaries of the muscles; indeed, the effect of guaiacum in relieving painful manifestations located in the muscles was well known. Taking into consideration the bulk of the muscular system, it was easy to imagine that any interference, however small, with its metabolism, must have an appreciable effect upon the juices, and as to the glandular system, guaiacum acted in that

direction also, and was a recognized hepatic stimulant. If the drug were used over a long period in doses sufficient to cause a laxative action, this would influence the health of gouty persons very materially. He had found tincture of iodine very useful in combination with guaiacum.

The president, Dr. W. Howship Dickinson, said that the treatment of rheumatism by guaiacum was a very old practice ; it had been used at St. George's Hospital for at least a century, and the method was certainly much more successful than others in use at the early part of this time. The treatment of acute rheumatism by guaiacum had been continued until the last twenty years, and even now it was used for chronic rheumatism. From his own experience he could speak very strongly as to its value in some forms of acute rheumatism as well as in gout. With regard to the relation of uric acid to gout, he placed himself in the position of a disbeliever. There was no doubt of its presence, but he preserved doubts as to its being the real cause ; was it not what we might call a by-product ? During convalescence from scarlet fever when nephritis was present, it was not uncommon to find enormous quantities of uric acid passed, but that did not necessarily lead to gout.

"Sir A. B. Garrod, in reply, said that with regard to the absolute and necessary connection between gout and uric acid, one never missed finding urate of soda deposited in the tissues after even the slightest attack of gouty inflammation. He admitted the value of guaiacum in acute rheumatism, but many cases formerly treated as acute rheumatism were really instances of acute gout. Though many pains formerly treated as syphilitic were possibly gouty, yet he was convinced also that guaiacum would relieve muscular pains which were not gouty. Though he had frequently prescribed this or that drug in combination with guaiacum, he did not commonly give many together. As healthy, normal skin could not secrete uric acid, he could not advocate 'sweating the disease out.' He was convinced that there could be no gouty symptom without the presence of urate of sodium in the blood, and this had no relation to the amount thrown out by the kidneys. Guaiacum might act by increasing the amount excreted, causing visible deposit in the urine, to which the patient would call attention."

As the treatment of gout continues to be such a vexed, as well as important, question, it was thought profitable to quote the above abstract quite fully.

*Ichthyol* (ammonium ichthyol-sulphonate) has broadened its sphere of application considerably during the past year. The dermatologists still rely on it and demonstrate its usefulness. Among many reporting upon its use, it may be of interest to mention that Dr. Max Klonk treated a severe case of ichthyosis of long standing in a fifteen-year-old boy, with this agent. This case had resisted all other forms of treatment. The patient was first given a warm bath of about twenty minutes' duration, containing one ounce of pure ichthyol, and then rubbed down with a bland soap and water, a rough towel being used for drying. Following this, the affected portions were rubbed with pure ichthyol, the patient wrapped in woolen blankets, and given repeated doses of extract of jaborandi to stimulate diaphoresis. The next day the patient was rubbed down with soap and water, and in the evening he took a bath in warm water containing sea salt. On the third day, the treatment was repeated; thus the patient received, in the course of one week, three ichthyol baths and inunctions, three warm soap baths in the morning, and three sea-salt baths in the evening.

Internally the patient took three 2-grain capsules of ichthyol daily for the first week, six daily the second week, and eight daily during the sixth week; this quantity being given for some time.

Under this treatment the patient gained rapidly in weight; his appetite was excellent, and the horny masses atrophied, being frequently found in the water after bathing. After four weeks' treatment, the greater portion of the diseased surface was free, the skin being smooth, soft, and moist. During the day, the patient usually kept his body moist with glycerin and water (1:3); and occasionally an ointment of sulphur, resorcin, zinc, and bezoinated lard was substituted.

Another case is also reported in which very decided results were obtained in eighteen days. The satisfactory results obtained by this course of treatment have convinced Dr. Klonk that ichthyol possesses *specific* virtue in ichthyosis, even when severe.<sup>1</sup>

Naturally, from past experience, its use has been continued with some success in the treatment of pulmonary tuberculosis. As ichthyol solution has a very disagreeable odour, capsules have been preferred, holding 250 milligrammes (3.8 grains).

In ophthalmic practice, a 10 to 15 per cent. ointment in lanolin has been found effective in ciliary blepharitis. Collyria of from 1 to 3 per cent. are beneficial in phlyctenular conjunctivitis and ordinary catarrhal ophthalmia.

<sup>1</sup> Ohio Med. Journ., vol. vii, p. 145.

Dr. Leo. Leistikow, of Hamburg, Germany, reports that he has used this agent for the past six years in the treatment of burns of the first and second degree, with the best results. The application of this substance at once eases pain and the anodyne effect is lasting. Even in extensive burns of the second degree the oedema quickly subsides, the hyperaemia disappears, and as soon as the destroyed tissue has been shed, the regeneration of epithelium begins.

Dr. C. Boeck recommends the following formula in the treatment of chilblains:

Ichthyol . . . . .	1 gramme (15.4 grains)
Resorcin . . . . .	1 " (15.4 " )
Tannin . . . . .	1 " (15.4 " )
Water . . . . .	5 grammes (77.2 " )

To be rubbed on every night. A varnish-like surface is formed on the skin in a few minutes, and soon the pain and diffuse oedematous swelling disappear. A disadvantage in this treatment is the blackening of the skin, which persists at times as long as two weeks.

The efficacy of this agent in pertussis, ozaena, coryza, and parotiditis continues to be reported. Dr. L. Maestro, of Padua, Italy, reports very encouraging results.

"The ichthyol was administered in the form of pills in progressively increasing doses, beginning, according to the age of the patient, with from 5 to 20 centigrammes daily. The dose was then rapidly pushed to 60 centigrammes, or 1 gramme in the twenty-four hours. Sometimes the internal administration of ichthyol was associated with inhalations of a 3 per cent. glycerin solution of the same substance.

"In the eight cases of whooping-cough in which this treatment was resorted to, all the morbid symptoms rapidly subsided, and recovery was obtained within a time, varying according to the gravity of each case, but always comparatively short. The ichthyol treatment was invariably well borne by the little patients. There was no noxious action on the kidneys in any case, and the influence on the general condition was very favourable.

"Dr. Maestro concludes from these observations that ichthyol must be considered as one of the most efficacious remedies in whooping-cough, the spasmodic attacks rapidly decreasing in number and intensity, and the duration of the affection being shortened in a marked degree."<sup>1</sup>

<sup>1</sup> The Medical Week, vol. iv, p. 431.



The foetid breath in ozaena is reported to be effectively counteracted by the use of two or three syringefuls of a 2 to 5 per cent. solution of ichthyol injected into each nostril while the head is held well forward and the mouth kept open to prevent swallowing the solution.

In coryza, the following solution is recommended to be sprayed into the nose:

Ichthyol . . . . .	1 part.
Ether . . . . .	1 "
Alcohol . . . . .	1 "
Distilled water . . . . .	97 parts.

In the treatment of a very painful type of parotiditis complicating influenza, Dr. Tronchet, of La Rochelle, France, has met with success generally within two days' time by rubbing the following ointment on the affected gland three times a day and applying a cotton-wool dressing:

Ichthyol . . . . .	3 grammes ( 46.3 grains)
Lead iodide . . . . .	3 " ( 46.3 " )
Ammonium chloride . . . . .	2 " ( 30.9 " )
Lard . . . . .	30 " (463.0 " )

In a paper written by Dr. E. A. Edlén, of Moline, Ill., on "Ulcers of the Leg,"<sup>1</sup> he gives the following ointment, which he has found valuable, applied once a day and varied in the proportions to suit the case:

Carbolic acid . . . . .	2.0 parts.
Boric acid . . . . .	10.0 "
Powd. camphor . . . . .	7.5 "
Ichthyol . . . . .	20.0 "
Oil of citronella . . . . .	q. s.

Zinc oxide ointment to make up 100 parts.

Dr. Eberson reports the very effective use of this agent in solution in five cases of erysipelas. He considers it a specific in a fifty per cent. solution in glycerin, for adults, and half that strength for children. The solution is applied freely by brush in concentric rings, starting about an inch from the edge of the inflamed region and finally coating the central portion several times.

In adherent fibrous tumors of the uterus, Dr. Jules Chéron has

<sup>1</sup> N. Y. Med. Journ., vol. lxiii, p. 352.

obtained rapid recovery by the use of a solution in glycerin, applied to the vagina on absorbent cotton, or of an ointment applied to the abdominal walls, together with internal administration in one gramme (15.4 grain) capsules.

Dr. Robert Bell, of Edinburgh, Scotland, reports that this agent will be found to be a most reliable and almost uniformly potent therapeutic agent where inflammatory conditions of the uterine appendages exist, if measures be taken to remove the primary disease or lesion simultaneously with the treatment of the secondary, more especially where laceration of the cervix co-exists.

Dr. S. Ehrmann has met with encouraging results with this agent in the treatment of peri-urethral abscesses and blenorrhagic prostatitis. He makes use of cacao-butter bougies containing twenty milligrammes (5-16 grain) of ichthyol. He prefers this agent to the commonly used iodine and extract of ergot. Introduction of the suppositories into the rectum when the prostate is affected is of much value at times.

Dr. Leon Canova has recently described "the treatment of gonorrhea by irrigations of ichthyol as practised by him at the Hôpital du Midi. An irrigator is filled with a solution of ichthyol of the strength of one or two per cent., which is conveyed to the urethra by an india-rubber tube terminating in a nozzle, which is introduced into the urethra for two or three centimetres, and which is so constructed as to block up the meatal orifice and so prevent the solution from escaping. The ichthyol solution is introduced into the urethra until that tube is distended to its utmost, and is then allowed to escape, a procedure which is repeated till a litre of the solution has been utilised.

"The conclusions arrived at by Dr. Canova are as follows: (1) Ichthyol, by its analgesic, antiphlogistic, and antiseptic properties, is indicated in the treatment of gonorrhea in preference to any other substance; (2) irrigations with ichthyol compare favourably with other applications, especially with permanganate of potash and nitrate of silver, in that they have the advantage of being quite painless; (3) they can constantly be employed at the commencement of an attack, not with a view of aborting it, but more to mitigate the inflammatory symptoms, and to prevent the extension of the disease to the posterior urethra. Two daily irrigations of the anterior urethra continued for five or six days will give indications for later treatment; if there is no modification of the discharge, and if the applications are not well borne by the urethral mucous membrane we should not hesitate to suspend them

till the disease has arrived at the subacute stage; (4) in the period of decline, the ichthyol irrigations in solutions of one or two per cent. will generally produce a rapid cure; (5) in certain cases they fail, as do all other measures suggested in the treatment of gonorrhea."<sup>1</sup>

Dr. A. I. Ilinski, of Moscow, Russia, "successfully treats gonorrhea in male patients by injections with an ordinary syringe of ichthyol and by mercurial ointment, employed in various ways according to circumstances.

"He prefers this method of treatment to irrigations with antiseptics or astringents, intra-urethral instillations of silver nitrate, etc., all of which present the inconvenience of protracting the gonorrhea by favouring complications, such as prostatitis and catarrh of the neck of the bladder."<sup>2</sup>

*Iodides* of potassium and sodium are still undergoing critical comparative examination. Professor Briquet now reports the results of his careful therapeutic study of these two rivals, and concludes that the effect of the potassium salt is more pronounced in most cases; is fully as efficient in cardiac affections, and far outranks the sodium salt in affections of the respiratory organs and in attacks of dyspnoea. In rheumatic affections, also, the potassium salt is much superior.

A combination of potassium iodide with iodine is now reported as of value in the treatment of intercostal neuralgia, of probable rheumatic origin. Dr. F. Parona, of Novara, Italy, "has had under observation a woman, forty-five years of age, who for several months had suffered from severe pain, principally at the point of emergence of the seventh and eighth intercostal nerves on the left side. This neuralgia not having yielded to massage, blistering, or injections of morphine, and being, on the other hand, apparently of rheumatic origin, Dr. Parona advised Dr. Grazianetti, under whose care the patient was, to have recourse to hypodermic injections of iodine and potassium iodide, employed by Professor Durante.<sup>3</sup> Of this mixture one cubic centimetre was injected every other day in the neighbourhood of the affected nerves. After the third injection the pain began to subside, and after eight injections had been administered, the improvement was so marked that the treatment was suspended at the patient's request. A few months later she had a slight attack of neuralgia,

<sup>1</sup> The London Practitioner, vol. lvi, p. 309.

<sup>2</sup> The Medical Week, vol. iv, p. 216.

<sup>3</sup> The Medical Week, 1894, p. 274.

which promptly yielded to phenacetin. Since then there has been no recurrence of intercostal pain.

"Dr. Parona is therefore of opinion that Professor Durante's iodine-iodide solution should be included among substances such as carbolic acid, osmic acid, and others, to which recourse may be had with advantage for the hypodermic treatment of certain forms of neuralgia, more particularly when due to compression of the nerves by exudations of rheumatic origin."<sup>1</sup>

Those desiring to use sodium iodide in the pill form are recommended to use the following formula:

Anhydrous sodium iodide,	4.000	grammes	(61.73	grains)
Powdered sugar	. . . 0.400	"	( 6.17	" )
Powdered starch	. . . 0.600	"	( 9.26	" )
Distilled water	. . . 1.000	"	(15.43	" )

After rubbing the iodide and sugar together in a mortar, add the whole of the water and mix thoroughly. Finally add the starch and complete the thorough mixing. Place the mass while yet soft on the pill machine, having previously dusted the latter with powdered starch. Roll out the pills rapidly and dry them in a warm capsule.

*Iodoform* not only holds its own against its many substitutes, but is continually being tried under new conditions. Its intra-articular injection has proved disappointing to many, but Dr. A. H. Ferguson, of Chicago, Ill., has been much encouraged by his results in the treatment of hip-joint disease. He read a paper reporting at least twenty-five cases at the forty-sixth annual meeting of the Illinois State Medical Society, held in Ottawa in May last.

"The intra-articular medication of tubercular joints," he said, "was of recent date, and was not yet very widely employed. It was with the hope of stimulating the profession to use it more and more that he presented his views on, and experience with, this treatment. The hip-joint had been selected on account of the frequency with which it is diseased, and because, in the speaker's hands, it had been more amenable to the iodoform emulsion injection than any other joint.

"The objections to the hitherto recognised methods of the treatment of hip-joint disease were: (1) The high rate of mortality; (2) The long time that the patient was under treatment; (3) The great deformity that so commonly ensues; (4) The complications that are

<sup>1</sup> The Medical Week, vol. iv, p. 276.



liable to set in and carry off the patient. The author then outlined the manner of using intra-articular injections of iodoform emulsion.

"As to the time of treatment, the longest period that he deemed it necessary to pursue the injection method before a cure was effected was nine months, and it was a case well advanced in the second stage. He had treated upward of twenty-five cases with the most satisfactory results, and which, so far, appear to have been cured, with the exception of two cases, one who refused to receive the subsequent injections, and the other had marked tuberculosis of the apices of both lungs, but he gained over twenty-five pounds during the five months he was under treatment."<sup>1</sup>

In the abstract given above, no mention is made of the composition of the emulsion used. The following, however, is reported elsewhere as being an efficient one :

Iodoform . . . . .	20 grammes (about 5 drachms)
Glycerin . . . . .	31 " ( " 1 ounce )
Distilled water . . . . .	90 " ( " 3 ounces )

Prof. K. Garré, of Tübingen, Württemberg, Germany, "has employed parenchymatous injections of iodoform in goitre, as recommended by Prof. Mosetig-Moorhoof, in one hundred and forty cases, with excellent results. It has the advantage of being both simple and easily carried out, without disturbing either the business or the health of the patient; it is also without danger. He employs the following solution:

Iodoform . . . . .	1 gramme (15.4 grains)
Olive oil . . . . .	7 " (108 " )
Ether . . . . .	7 " (108 " )

"After disinfection of the skin, the gland is fixed between the second and third fingers of the left hand, while standing behind the patient and pressing the goitre against the spinal column. Avoiding all visible cutaneous veins, the cannula is plunged quickly from an inch to an inch and a half into the gland; then, removing the left hand, the needle is held loosely in the hand, and the patient is told to swallow. If it is actually in the goitre, then it will move up and down with the movements of the larynx. Then 1 c. cm. of the solution is injected slowly, the needle withdrawn, and the point of puncture either wiped off or covered up with a piece of plaster. One syringeful is usually sufficient at a time. Injection

<sup>1</sup>Journ. Amer. Med. Assoc., vol. xxvi, p. 1177.

causes generally only a little burning. Here and there patients complain of pains in the ears or teeth, which are of short duration; others experience a sensation of tension in the neck, which, at the most, lasts for two days. Otherwise the procedure is utterly devoid of danger. The injections are made, as a rule, every two to five days. Seven are generally sufficient, though they may vary between three and sixteen. After three to five injections, a reduction of two to three centimetres in circumference of the neck was noticeable. In many cases, the ultimate result was not to be determined until a year after. The soft goitres react best under this treatment—simple hyperplastic goitre, the diffuse and nodular forms, and the soft follicular variety. Most of the cases were in more or less advanced colloid degeneration.”<sup>1</sup>

Dr. James R. Hayden, of New York, read a paper before the American Association of Genito-Urinary Surgeons at Niagara Falls on May 28 last, on “Iodoform Ointment Injections in the Treatment of Suppurative Adenitis of the Groin,”<sup>2</sup> in which he adopted the plan of Dr. W. K. Otis. He states:

“The steps in the procedure are similar to those advocated by Fontan, with the addition of the peroxide of hydrogen, and are as follows:

“1. The operative field is shaved and rendered surgically clean in the usual manner.

“2. A few drops of a 4 per cent. solution of cocaine are injected beneath the skin where the puncture is to be made.

“3. A straight, sharp-pointed bistoury is then thrust well into the most prominent part of the tumor until pus flows.

“4. All of the pus is forced out through this opening by firm, but gentle, pressure, as this procedure is, as a rule, very painful.

“5. The abscess cavity is irrigated with pure peroxide of hydrogen until it returns particularly clear.

“6. It is then irrigated with 1:5,000 bichloride of mercury solution, all of which is carefully squeezed out.

“7. The now thoroughly cleansed abscess cavity is completely filled, but not painfully distended, with 10 per cent. iodoform ointment, by means of an ordinary conical glass syringe, previously warmed in hot water.

“8. A cold, wet bichloride dressing is applied with a fairly firm spica bandage, the cold congealing the ointment at the wound, and thus preventing its escape into the dressing.”

<sup>1</sup>The London Practitioner, vol. lvi, p. 334.

<sup>2</sup>Amer. Journ. Med. Sciences., vol. cx, p. 519.

He then gives a table recording the aetiology, amount of pus evacuated, number of injections employed, and time of cure in each of his fifteen cases. He concludes as follows:

"In order to secure the most favourable results from this method, it should only be employed when the glands are quite thoroughly broken down, so that the iodoform may come in direct contact with all of the infected tissues.

"It is not, of course, claimed that this method will succeed in every case of suppurative adenitis; but its many advantages over the more radical procedure render it, in my judgment, worthy of a trial. There is no necessity for the patient to remain in bed, or undergo anaesthesia; the little scar in the groin is soon covered by hair, and he or she is spared a more or less painful and tedious convalescence. If after one, two, or even three injections, this method fails to produce the desired result, an incision may then be made and the contents of the bubo removed, the previous treatment not having interfered in any way with this operation."

"The treatment after Estlander's operation is an extremely slow and difficult one. In spite of antiseptic irrigation of the pleural cavity, it takes a very long time to stop the purulent secretion of the serous membrane. Two recent observations by Dr. R. O. Gredinger (Bogorodsk, near Moscow) are, therefore, of considerable interest in that they tend to show the advantage, under such conditions, of introducing into the pleural cavity a solution of 30 parts of iodoform in 100 parts of glycerin.

"The first case was that of a patient in whom thoracotomy, with resection of a part of the fifth rib, gave issue to two liters and a half of foetid pus. The patient immediately experienced great relief, but as the pleural suppuration, fever, pain, and cough did not improve, he continued to lose strength. It then occurred to Dr. Gredinger to inject daily into the pleural cavity, at the time of renewing the dressing, fifteen grammes of iodoform glycerin. After the very first injection, the temperature fell to normal, and, when the dressing was removed on the following day, it was found that the purulent discharge had been replaced by a serous exudation. After two weeks of this treatment, an acneic eruption supervened, on account of which the injections of iodoform glycerin were suspended for a week. They were then resumed, though continued only for four days, as complete recovery was then obtained.

"In the second case of empyema, Dr. Gredinger, beginning with the fourth day after Estlander's operation, resorted to injections into the pleural cavity of iodoform glycerin, in daily doses of 6

grammes. During the entire treatment, the patient's general condition was excellent, and recovery was obtained within two weeks and a half."<sup>1</sup>

In treating many small-pox patients, Dr. Th. Faure, surgeon to the hospital at Chaux-de-Fonds, Switzerland, has found that frequent applications to the eruptions of the following iodoform colloidion prevent any trace of pitting :

Iodoform	.	.	.	.	2 grammes (30.9 grains)
Collodion	.	.	.	.	30 grammes (about 1 ounce)

*Iodoformin* is the name adopted for a recently-introduced substitute for iodoform. It is produced in Bonn, Prussia, by a patented process, and its exact composition is withheld for the present, at least, but Prof. E. Konteschweller suggests that it may be analogous to, if not identical with, a compound obtained by him some years ago by mixing an alcoholic solution of iodoform with an alcoholic solution of urotropin. It is claimed to be a strictly chemical compound, containing about 75 per cent. of iodoform, which is slowly but readily given up under certain conditions. It is reported to be a fine, very light yellow powder with the unmistakable odour of iodoform, but much less powerful and persistent. It is not very soluble in cold alcohol or ether, but readily so in hot alcohol. On contact with acid or alkaline fluids, it parts with its iodoform. It apparently acts only when in actual contact with the secretions in wounds, drying them up without forming a crust, and when there are no longer any secretions present, the iodoform is not liberated; thus an excess of the agent is not harmful. It readily forms an emulsion with glycerin and makes up into an efficient ointment. It will stand a temperature of 140° C. (284° F.), and therefore may be easily sterilised. Clinical reports are yet wanting.

*Iodol* (tetra-iodo-pyrrol)—the iodoform substitute—has received little attention in the medical and pharmaceutical literature of the year. Dr. Domenico Majocchi seems to be the only prominent observer reporting. He has had it under observation for four years and is now able to report on its use in 558 cases. One hundred and eighty-seven were soft and syphilitic chancres which healed rapidly in comparison with other treatment. He recommends it for several reasons: 1. Its freedom from odour makes it more acceptable to the patients. 2. It is non-toxic, even when used extensively. 3. It hastens cicatrization, and 4. The preparations now in use are stable and produce no irritation.

<sup>1</sup>The Med. Week, vol. iii, p. 573.



The laryngologist finds it of service in laryngeal ulcerations of tubercular origin where two insufflations a week cause the ulcer to assume the appearance of a granular wound. The powder used is either iodol alone or combined as follows :

Iodol . . . . .	5 grammes (77.2 grains)
Calomel . . . . .	5 “ (77.2 “ )

*Ipecacuanha* (ipecac), powdered and made up into a paste, is reported to be a remarkably efficient remedy in the treatment of the sting from bees. This statement is based on the personal experience of a medical practitioner in Baroda, India, who had been badly stung about the head, face, neck, and hands by a number of bees from a swarm which had attacked him. He states that as many as 150 probosces were drawn from his neck alone, so that the attack was no light one. By means of this ipecac paste smeared on, the pronounced swelling and severe pain were markedly reduced.

*Itrol* is the name given to the salt silver citrate recommended by Dr. Credé, together with actol (silver lactate) previously mentioned. Some practical objections being found against actol, Dr. Credé introduced this citrate with success. It has less irritating effects than actol, is non-toxic, and acts as a very efficient surgical antiseptic when used both as an ointment and in the powder form. It is described as a fine, dry, odourless powder, only slightly soluble in water.

Dr. Oscar Werler, of Berlin, Prussia, reports having used it, beginning with solutions as dilute as 1 to 8,000, both as an injection and by irrigation, with very gratifying results in fully fifty cases of acute and chronic gonorrhea, in three cases of gonorrheal urethritis in women, in gonorrheal inflammation of the vulvo-vaginal glands, and in a few cases of chronic cystitis. He finds that it is a powerful agent to destroy the gonococcus, acts well upon the urethral mucous membrane, and is penetrating in its action, reaching deeper than the surface—thus acting as an efficient remedy, especially in gonorrhea.

*Izal*, the patented antiseptic, has received little attention during the past year, notwithstanding the favourable report of Mr. Sheridan Delépine concerning its remarkable antiseptic properties alluded to here last year. It may be well to repeat that this agent consists of a 30 per cent. emulsion of a special oil produced by a patented process employed in the manufacture of a special form of coke.

The only prominent mention of this agent throughout the year was made by Dr. F. W. Tunnicliffe, M. R. C. P., of London, England, in the scientific workroom of St. Bartholomew's Hospital in relation to its pharmacology, where apparently previous observations were verified. Those interested will find this report in the *Pharmaceutical Journal*, Vol. II, Fourth Series, p. 301.

It does not seem to have impressed the general surgeon with as much importance as would naturally be inferred from the accounts of its enthusiasts.

*Lactophenin*, closely related to phenacetin and a close rival of antipyrin, continues to be used quite extensively, and appears to answer well in certain special cases, but among its drawbacks Drs. Hermann Strauss of Giessen, Germany, and F. Kölbl of Vienna, Austria, observe that it is far from being harmless. Dr. Strauss reports three and Dr. Kölbl two cases, where jaundice and dyspeptic disturbances were produced from retention of bile in the system, as shown by the colourless faeces after administration of this agent in long-continued large doses for neuralgia and muscular pains.

*Loretin* (meta-iod-ortho-oxy-chinolin-ana-sulphonic acid)—the iodoform substitute—although now over two years old, has not taken the prominence planned for it. However, the accounts of its action, which are given both in the old country and in this, are all still in its favour. One of the most complete studies of the year will be found in a report made by Dr. Herbert Snow, surgeon to the Cancer Hospital, London, England,<sup>1</sup> in which he states:

“My own experience is confined to the powder, which I have never found occasion to mix with any other substance. Dusted on the skin, or over a granulated wound, this causes not the slightest irritation or unpleasant sensation. It immediately destroys the malodour of the most foetid cancerous sore, controlling this in a manner which no other agent I have yet tried will do. Copiously puffed with an insufflator into the deep cavity formed by evacuating the axilla of carcinomatous glands, it efficiently precludes suppuration, even when free haemorrhage has taken place after the closing of the wound, an occurrence almost inseparable from anaesthetic vomiting when the patient has been removed from the operating table. Not the slightest bad symptom from its employment in this way has so far been detected. When there is no deep cavity, a wound dusted with loretin heals rapidly by first intention. I have had recourse to loretin in some

<sup>1</sup> Brit. Med. Journ., vol. ii for 1895, pp. 1549, 1637.

sixty cases, mainly operations on the breast and axilla, notoriously a test region for antiseptics. In my hands it has proved an ideal antiseptic and deodorant, with no single drawback; and I am sure that no surgeon who has once tried it will ever again resort to the noisome and toxic iodoform, from the free use of which I have seen more than one death. Though, whenever old-established agents answer sufficiently the purpose, I have a strong prejudice against novelties, yet this substance—non-poisonous, devoid of smell, and absolutely preventative of suppuration—seemed to me so marked an advance upon anything previously brought forward, that I felt constrained to direct thereto the notice of the section." A week later, he writes he is forced to supplement his paper "by pointing out a peculiar quality which the six months' experience gained since the July meeting has shown me it possesses. While taking first rank as a non-poisonous, non-irritating, odourless antiseptic and deodorant, I find that when dusted on a raw surface it relaxes the blood-vessels. Hence the wound is prone to become subsequently filled by a clot, which, however, does not suppurate, as would be the case under almost any other circumstances, but is eventually reabsorbed. The incident is not desirable, and I now apply loretin only to the skin surface, never dusting it into a cavity unless there be special risk of suppuration, and then only very sparingly. I would take leave to add that long experience has shown me the ideal condition in which to leave any operation wound to be the utmost attainable maximum of dryness, avoiding all swabbing with fluids, however antiseptic. It is probable that the efficacy of iodoform loretin, and the like, is very largely due to their capacity for absorbing moisture, without which microbe proliferation does not occur."

*Losophan* (tri-iodo-meta-cresol)—the antiseptic containing about eighty per cent. of iodine—has practically gone out of notice.

*Luteol* is the trivial name applied to oxy-chlor-di-phenyl-quin-oxalin, a new indicator possessing certain advantages over phenolphthalein and litmus. Warning is given not to confuse the name with that of the yellow colouring matter luteolin.

"Luteol occurs in fine, woolly, yellowish needles (melting point 246°), which are insoluble in water, sparingly soluble in cold alcohol, but readily soluble in hot alcohol and in ether. Luteol is also insoluble in dilute hydrochloric acid, only sparingly soluble in the concentrated acid, and forms a red solution in concentrated sulphuric acid, being reprecipitated from the latter solution on adding water. It expels carbonic acid from carbonates,

readily dissolved by alkalies, a yellow solution being formed. A distinct yellow colour appears on adding a few drops of an alcoholic solution of luteol to five to ten c.c. of a solution obtained by the addition of a drop of dilute soda-lye to one liter of water, the new indicator being therefore decidedly more sensitive than either phenolphthalein or litmus. Another advantage of luteol over phenolphthalein is that it is applicable in the presence of ammonia, whilst as compared with litmus there is no intermediate colour produced during the change."<sup>1</sup>

*Lycetol* (di-methyl-piperazine tartrate)—the uric acid solvent—has been sparingly reported on during the year, and nothing new has developed. Those who do make use of it are confident of its superiority over other agents.

*Lysidin* (ethylene-ethenyl-di-amine) has received comparatively little attention during the past year, especially in this country. About the only prominent communication on the subject was the report of a special research authorised by the Scientific Grants Committee of the British Medical Association, and undertaken in the pathological chemistry department of University College by Dr. F. Woodcock Goodbody<sup>2</sup>, in which he says: "The relative value of lysidine and piperazine as solvents of uric acid in the urine was investigated, as published opinions of their real use were so divergent. In the experiments performed, up to the present the solvent power of these drugs has been tested on uric acid calculi or in patients. The mode of experimenting on patients leads to so many possible causes of error, such as changes in diet, mode of living, etc., that it is extremely hard to draw conclusions from them.

"As is now well recognised, uric acid is not eliminated from the kidneys in the form of free uric acid, and never exists in the blood except as some more or less solvent urate. The experiments of Bence Jones and Sir William Roberts show that urates are in all probability excreted as quadriurates in the urine.

"The proper method of testing the value of these drugs, therefore, appeared to be to see what power they would have of retaining urates in solution in the urine. At the suggestion of Professor Vaughan Harley, the following experiments were performed in his laboratory, and I must express my thanks to him for his kind assistance and advice throughout my research. The experiments were done on the urine of a person suffering from uric acid gravel, to-

<sup>1</sup> Pharm. Journ. vol. ii, fourth series, p. 163.

<sup>2</sup> Brit. Med. Journ. vol. i, for 1896 p. 901.



gether with other symptoms, such as muscular and lumbar pains. Throughout the experiment, the patient was kept on the same diet, and the amount of fluid was kept as nearly as possible equal."

Then follows a detailed account of the experiments, together with five interesting tables showing the effect of the addition of certain proportions of these two agents.

"The conclusions to be drawn from this vexed question, are:

"Piperazine and lysidine, when added to a urine tending to deposit uric acid gravel, are capable of hindering the deposit during standing.

"The total experiments, all of which are unable, from want of space, to be given here, show that lysidine is a more powerful solvent for uric acid than piperazine.

"Both piperazine and lysidine, when taken internally, appear to increase the elimination of uric acid, not by increasing its formation in the organism, but by rendering the blood more capable of removing it from the tissues by increasing its solvent power. So that prolonged administration of these drugs in the end causes a diminution in the quantity of uric acid eliminated by the kidneys.

"Piperazine and lysidine are both diuretics, and cause an increased elimination of nitrogen, which is partly due to the increase of the nitrogen in the uric acid, and in part due to its diuretic action."

*Lysol* (the saponified product of coal-tar, chiefly composed of cresols)—the substitute offered for carbolic acid—has not been much used during the year, if the scant mention in the medical and pharmaceutical literature is any guide. It may be that the complaint from some sources, that it is frequently very irritating to the mucous membrane, has caused its discontinuance. The only prominent mention of it is by Dr. Eduard Boeckmann, of St. Paul, Minn., who read a paper before the Section on Surgery in the American Medical Association, at the annual meeting in Atlanta, Ga., in May of this year, on "Surgical Sterilisation and Sterilisers in Private Practice."<sup>1</sup> He reports that: "Supported by further experience, I can this year more strongly than last, recommend the 1 to 2 per cent. solutions of lysol at 120° F. for combined mechanical and chemical disinfection of the operator's hands and the patient's skin.

"Lysol possesses the undeniable advantage of being at the same time antiseptic and aseptic; it is a happy combination of a powerful disinfectant and soap (saponified cresol). It has the

<sup>1</sup> Journ. Amer. Med. Assoc. vol. xxvi, p. 1099.

dissolving and penetrating properties of an alkaline substance. I know of no agent which at the present time is better adapted and more reliable in the disinfection of the skin than lysol, with the possible exception of alcohol, which certainly, with good reason, receives the support of the world. Heretofore we have viewed alcohol in the light of a purely mechanical agent in the disinfection of the skin; this can no longer be successfully maintained. Alcohol is certainly a potent solvent of a great number of substances, sparingly, however, of fats. Alcohol must be viewed as a strong antiseptic, possessing the same significance for the skin as for anatomic preparations, taking up its moisture, penetrating and hardening them; a decided advantage over ether and turpentine, which certainly dissolve fat much more readily but which are much less hydrophile. In order to obtain the greatest possible antiseptic effects of alcohol, it is obvious that the skin must be dried, and strong, preferably absolute alcohol used, and the skin energetically rubbed for some little time. Since experience has taught me that the germicidal principle in lysol acts as a powerful antiseptic in the above-mentioned strength, and as a prolonged friction with absolute alcohol makes my skin uncomfortably hard and brittle, I reserve the alcohol for the field of operation only."

*Malakin* (salicyl-para-phenetidin) has not received any reports of importance. It is still used to a limited extent as an antipyretic, antirheumatic, and anodyne. Some observers still claim that it is more rapid, more certain, and freer from secondary reactions on the pulse, digestion, and nervous system than sodium salicylate in the treatment of acute and chronic rheumatism.

It has now been used by Dr. F. Ottolenghi as an anthelmintic. His experiments on dogs lead him to conclude that it probably first detaches the head of the worm from the wall of the intestine and then gradually kills him. Its prolonged use is in no way harmful, which is a desirable property.

*Malarin* is the copyrighted name adopted for a new patented compound from Germany, claimed to be the citrate of a condensation product of aceto-phenon and para-phenetidin, and described as a harmless antipyretic in doses of 5 grammes (77.2 grains) and of value in the treatment of neuralgic headache and toothache. It is presented in the form of yellow needle-like crystals insoluble in cold water, but readily soluble in hot alcohol and with a slight acid taste.

Nothing has been heard of it as yet in this country.

*Mallein*, the tetanus antitoxin analogous to tuberculin, has now

assumed very definite prominence. Not only are the investigators in Europe alive to its importance in the diagnosis of glanders, but in this country much scientific work has been accomplished. After a series of careful investigations for a definite period, the health department of New York city reported itself prepared to furnish mallein for the diagnosis of glanders in horses. It is prepared by Nocard's method and is furnished in vials containing a single dose of 2.5 c. c. (about 40 minims). The circular issued by the department states<sup>1</sup> that in order to obtain accurate results in all cases certain formulated directions should be followed. These directions follow and conclude with the request that all veterinary surgeons who use mallein will forward full reports of the results obtained.

*Menthol* continues to find new channels of efficiency. Dr. S. Solis Cohen, of Philadelphia, Penn., uses the following formula:

Menthol . . . . .	5 grammes (77.2 grains)
Chloral hydrate . . . . .	5 " (77.2 " )
Camphor . . . . .	5 " (77.2 " )

applied with a camel's hair brush as often as indicated, in the external treatment of intercostal neuralgia, pleuritic stitches of chronic pulmonary tuberculosis, and vague pains in different parts of the surface of the body.

In Germany the following formula is used for chapped hands, to be applied twice a day:

Menthol . . . . .	0.650 grammes (about 10 grains)
Olive oil . . . . .	1.2 c. c. (about 20 minims)
Salol . . . . .	1.2 c. c. ( " 20 " )
Lanolin . . . . .	45.0 c. c. (about 1½ fluid ounce)

Dr. R. Wünsche, of Dresden, Germany, recommends the inhalation of a 5 or 10 per cent. solution of menthol in chloroform to abort an attack of coryza. A few drops are placed on a handkerchief and five or six deep inspirations are taken. The sneezing, discharge from the nose, and the pain in the pharynx and larynx are very soon diminished and alleviation obtained.

Additional cases continue to be reported on its successful use in pertussis.

Dr. Theodore Wm. Schaefer, of Kansas City, Mo., has made good use (as an antiseptic) of the following mixture obtained by melting together:

<sup>1</sup>N. Y. Med. Journ., vol. lxiv, p. 232.

Cryst. carbolic acid . . . . .	1 part.
Menthol . . . . .	3 parts.

which has been called "mentho-phenol," resulting in a transparent liquid with an aromatic odour and taste. As this mixture may be of service to some, it may be profitable to quote here Dr. Schaefer's full report.

"Applied to the tongue it produces a temporary anaesthesia similar to that of cocaine, although not so lasting as the latter. It is of course lighter than water, having a specific gravity of 0.973. It is nearly insoluble in water and glycerine, but readily dissolves in alcohol, ether, chloroform, and most of the light and heavy oils. It dissolves iodine, iodoform, and aristol. Water of ammonia mixed with mentho-phenol changes it to a dark vinous colour in a few days.

"It is antiseptic with strong analgesic properties. It may be used preparatory to cauterising chancroidal sores and curetting necrotic surfaces. As a mouth-wash it may be used with advantage, two drops being mixed with an ounce of the aqueous menstruum.

"My brother, Dr. Edward H. Shaefer, has recently investigated the therapy of mentho-phenol. He employed the agent in chancroidal sores of the penis. In a case of phagadenic chancroid, where there seemed to be imminent danger of sloughing of the entire glans penis, the frequent use of ablutions of warm water mixed with mentho-phenol (three per cent.) soon stopped the destructive process and established resolution. He employed the agent in mucous patches, syphilitic in character, making daily application of mentho-phenol, which resulted in the healing of the abrasions.

"In a case of facial erysipelas in which the submaxillary and cervical glands were threatened by a destructive, suppurative process, the daily syringing of the suppurating tracts with warm water mixed with 3 per cent. of mentho-phenol, soon resulted in a subsidence of the suppuration. The most admirable results he obtained in a case of an abscess under the finger-nail, the result of traumatism. There was considerable pain and swelling, as is usual in such cases, the slightest touch to the inflamed member being unendurable. The finger was dipped in warm water mixed with mentho-phenol (5 per cent.). My brother plunged the lancet deeply under the finger-nail into the abscess, and to his surprise the patient uttered no cry nor manifested any demonstration indicative of pain. The patient assured him that



the pain had ceased like magic when the finger was immersed in the warm mentho-phenol mixture. The finger was dressed with gauze rendered antiseptic with 2 per cent. of mentho-phenol and healed in a few days.

"In a case of suppurative otitis media et interna, accompanied with great pain and throbbing, an offensive purulent discharge created an eczematous eruption in the vicinity of the outer ear. The frequent syringing of the auditory canal with very warm water mixed with mentho-phenol soon checked the suppurative, inflammatory process, and resulted in the disappearance of the eczema. In another case, in which a small insect had crawled into the ear of a lady, a warm mixture of 2 per cent. of mentho-phenol produced the insect, to the great satisfaction of the patient. Wounds incised, punctured, lacerated, etc., will heal kindly when cleansed with warm water mixed with 2 per cent. of mentho-phenol.

"In dental practice, mentho-phenol finds its indications as an anodyne anaesthetic, in odontalgia, obtunding the sensitiveness of dentine and as an antiseptic in alveolar abscess, suppurating pulps of teeth, periodontitis, etc.

"I have used the medicament in pustular acne. The pustules may be opened without causing much pain after having been first touched with vaseline containing 5 per cent. of mentho-phenol. Mixed with almond oil or alcohol, in the proportion of 2 per cent. of the medicament, I have used it as an external application in itching of the skin. I have never used it subcutaneously nor by the mouth.

"Mentho-phenol, like every other remedy, has its natural limitations of employment. It cannot, for instance, be used in ophthalmological practice on account of the unpleasant burning which follows its use when applied to the conjunctiva."<sup>1</sup>

*Methylene blue* (tetra-methyl-thionine chloride)—the anilin derivative—has not, on the whole, been favourably reported. Its results in malaria have apparently been successful in some cases, but as a whole they have not been encouraging. It appears to look now as if its days were limited.

*Migranin* (double citrate of antipyrin and caffen), recommended for the treatment of sick headache and neuralgia, has received practically no mention in the medical literature of the year. Its enterprising commercial agents, however, continue to keep it well presented to the practitioner, and if it finally turns out to be of no permanent value, nothing will surely have been lacking in the

<sup>1</sup> Boston Med. and Surg. Journ., vol. cxxxiv, p. 111.

way of presenting its favoured side. What has been definitely determined, however, is that it does not by any means suit all patients, as disagreeable results continue to be witnessed.

*Milk* is such an important food element, especially to infants, and so very many ordinary points are too often forgotten concerning its composition and its chemical and physiological changes, that it behooves physicians at times to explain to mothers why certain precautions should be taken. Therefore the following short reminder of a public analyst, Dr. J. L. Kerr, of Aberdeen, Scotland, may be of service to repeat here:

“Milk consists of a multitude of cells suspended in serum. The cells are fat cells which form the cream; the remaining cells are nucleated and of the nature of white blood-corpuscles. The serum consists of water in which is dissolved milk, sugar, and serum albumen, with various salts, and, chief of all, casein. The cells, with the exception of the fat corpuscles, are all living cells, and they retain their vitality for a considerable time after the milk is drawn from the mammary gland.

“Milk kept a few days may be perfectly sweet—that is, unsoured—but it has a different taste and appearance, and shows a tendency to separate into serum and the more solid portions, which tend to sink to the bottom of the vessel. This change in taste and emulsification is due to the death of the white blood-corpuscle-like bodies contained in the milk.

“There is reason for supposing that when fresh milk is ingested, the living cells are at once absorbed without any process of digestion, and enter the blood stream and are utilised in building up the tissues. The casein of the milk is digested in the usual way of other albuminoids, by the gastric juice, and absorbed as peptone. There is also absorption of serum albumen by osmosis.

“The chemical result of boiling milk is to kill all the living cells and to coagulate all the albuminoid constituents. Milk after boiling is thicker than it was before.

“The physiological results are that all the constituents of the milk must be digested before it can be absorbed into the system; therefore, there is a distinct loss of utility in the milk, because the living cells of fresh milk do not enter into the circulation direct, as living protoplasm, and build up the tissues direct, as they would do in fresh, unboiled milk.

“In practice, it will have been noticed by most medical practitioners that there is a very distinctly appreciable lowered vitality in infants which are fed on boiled milk. The process of absorp-

tion is more delayed, and the quantity of milk required is distinctly larger for the same amount of growth and nourishment of the child than is the case when fresh milk is used.”<sup>1</sup>

*Naphthol* ( $\beta$ -naphthol), in spite of its disagreeable taste, continues to be recognised by prominent observers as the best of all intestinal antiseptics. “The Action of Beta-Naphthol and Bismuth Subnitrate as Intestinal Antiseptics,”<sup>2</sup> was reported on to the Section of Pharmacology and Therapeutics, at the annual meeting of the British Medical Association, held in London in July, 1895, by Drs. N. Surveyor and Vaughan Harley, as follows:

“The investigation to determine the antiseptic value of  $\beta$ -naphthol and bismuth subnitrate was undertaken because, like most other intestinal antiseptics, they are largely used in intestinal troubles supposed to be of bacterial origin by one class of practitioners, while there is a very important class that considers any such attempt as simply futile, if not dangerous to the patient.

“Diseases of the type of cholera, dysentery, typhoid, summer diarrhoea of children, which are most probably due to bacterial infection, or are at least invariably associated with an enormous increase of one or several types of micro-organisms, are daily being treated with one or another kind of antiseptic that happens to be the latest favourite.

“Creosote, carbolic acid, perchloride of mercury, have been, at one time or another, used extensively and dropped, either on account of their extreme toxicity, or because the clinical results have proved to be unsatisfactory in some hands. . . . The paper treats of  $\beta$ -naphthol primarily and bismuth subnitrate secondarily. The observations were both chemical and bacteriological. Chemical experiments consisted in estimating the amount and ratio of alkaline and aromatic sulphates present in urine of man before, during, and after taking either of the drugs separately or together. The amount of urea was also estimated at the same time, to see how far the body was kept on nitrogen equilibrium. The method of administration was always *per os* in the form of powders. . . . The general result of these experiments was to show an increase of aromatic sulphates during the time when  $\beta$ -naphthol was taken either alone or with bismuth subnitrate. The total sulphates did not vary much during the same period, as compared with normal periods. On the other hand, the alkaline sulphates were always diminished under the influence of  $\beta$ -naphthol.

<sup>1</sup> Brit. Med. Journ., vol. ii for 1895, p. 1491.

<sup>2</sup> Brit. Med. Journ., vol. ii for 1895, p. 1483.

Consequently, the ratio between alkaline and aromatic sulphates, which was 10.1 during the normal periods, increased to 10.2 on an average, and on one occasion even went up as high as 10.4. . . . The results were, unfortunately, varying. The bismuth dogs as a rule passed black faeces for some days, then there would be no blackening for a day or two; nevertheless, the colour reappeared, although bismuth was continued throughout the period. The faeces of the  $\beta$ -naphthol and bismuth subnitrate dogs showed the same variations."

Unfortunately, no conclusions were drawn by the writers, as they contented themselves simply with the satisfaction that they had "tried to state the facts as concisely as possible." The experiments, however, are interesting and instructive.

*National Formulary* of the United States, in its revised form, has now been issued under the sanction and endorsement of the American Pharmaceutical Association. It is such a valuable and important compilation to the physician, as well as the pharmacist, that the writer not only feels it his duty, but his privilege, to call special attention to it. Surely if practitioners would look more closely into its scope, and attempt to appreciate its importance to themselves in the way of uniform therapeutic results, they could not fail to make more extended use of it. The committee have put an amount of faithful work upon it which cannot possibly be estimated by the mere printed pages, and they deserve the thanks and the praise of all who are interested in establishing a scientific basis for the professions of medicine and pharmacy. The repetition of a few extracts from the preface to the first edition will not be out of place here :

"It is well known that the remedies for which the Pharmacopoeia prescribes definite standards, constitute only a limited portion of the resources of the medical profession in the treatment of the sick. Without referring to the more ephemeral preparations, or to such as are of a proprietary character, or are used by the public for self-medication, there is a large number of others which are more or less frequently prescribed by physicians, or demanded by the public, but which are not recognised by the Pharmacopoeia, either because they were not deemed by the revisers to be of sufficient importance to be included in the official work, or because they originated subsequently to the appearance of that work, or for other reasons. Owing to the absence of an authoritative standard, many of these unofficial preparations have been and are being made after different formulae and in varying strength, so that the



pharmacists, particularly in the larger cities, are compelled to procure and keep on hand a variety of brands of what is intended to be one and the same preparation, to satisfy the demands of their patrons, professional or otherwise. The evils arising from this condition of things are so well known and so far-reaching in their results, that there is no need of any argument in favour of a plan which may palliate the existing evil, chiefly caused by a lack of uniformity, or the want of a common standard. . . .

“While it was at no time contemplated by the committee as a whole—though, perhaps, by some individual members—to devise imitations of any of the popular nostrums of the present day, yet it was very difficult to decide exactly where the line should be drawn. Consequently, the list will be found to include a small number of formulae which may recall some of the before-mentioned preparations, but which are constructed on rational principles, irrespective of mere external appearance and taste, and mainly with regard to uniform composition and reliable effect. It is not expected that these preparations will readily replace, in the eyes of the public, the much-advertised nostrums, but it is hoped that if proper therapeutic effects are expected from them, they will be used or directed to be used in place of the commercial articles, the composition of which is generally kept secret. A proposition was at one time made to include in the work definitions and descriptions of the more important crude drugs and chemicals which have come into use since the last United States Pharmacopoeia was issued. But it was found that the labour involved in the task already outlined was so great that no time could be devoted to any further additions. Hence the project had to be abandoned, though it will be a comparatively easy matter to incorporate these additions in a subsequent edition.

“In the selection of the particular process of working formula for each preparation, the committee has proceeded with all the care that it was possible to bestow upon it. All suggestions, recommendations, and criticisms were carefully and impartially considered, and whenever possible, practically tested. It is not to be expected, however, that the committee has always succeeded in making the best selection. Indeed, many of the formulae will, no doubt, hereafter, require modification to make them more perfect, after a sufficient time has elapsed to fully test the merits of the different processes.

“It is not within the province of the committee to meddle with matters of which the medical practitioner or the therapist is the proper and competent judge. In most cases, it was sufficient to take a formula just as it was already in existence, and to adopt it either entirely without change, or to restrict the modifications to the unessential features without affecting its therapeutic value and merely with a view to improve its form. There are, however, a number of preparations in which more radical changes appeared desirable. In these cases, the committee availed itself of the advice of competent medical authorities, either by personal interviews or by correspondence.

“The mission which this work is to fulfil can only be properly accomplished by the coöperation of the medical profession. It is, therefore, of the greatest importance that the members of this profession throughout the country be made acquainted with the existence, contents, and objects of this book, and that, if the same be approved by them, as is confidently expected, they will consent to accept the preparations made in accordance with the formulae contained therein, instead of designating any special maker's product.”

In prefacing the present *revised* edition of the “Formulary,” the committee states that the “demand for additional formulas has been carefully considered.” . . . “This demand, unfortunately, was in most cases for working formulas for preparations that have come into current use under fanciful trade names, and for which no formulas, other than obscure indications of composition borne on the labels, are known to pharmacy. The committee did not consider it within the scope of their duties to devise and construct formulas for such preparations, the more particularly since their composition is only imperfectly given, and because the demand for them seems to be dependent upon the skill and industry with which they are brought to the attention of the medical profession, rather than upon any intrinsic superiority that they possess over other medicinal agents. On the other hand, preparations for which working formulas were suggested to the committee, were uniformly subjected to critical experiment, and their formulas embodied in the revised ‘Formulary.’”

The committee has seen fit to embody in this revised edition the formulas of such preparations as were dropped at the last revision of the United States Pharmacopoeia, since some of these may still continue to be prescribed in various parts of the country; on the other hand, the formulas for all those preparations have been omitted, which appeared in the first edition of the “Formulary,”

but were subsequently introduced into the Pharmacopoeia of 1890.

Those practitioners who still claim that they are forced to use proprietary and patented articles because of a fancied belief that successful results will not be obtained otherwise, will do well to occupy a few moments of their office hours in at least skimming over the "Formulary." They will be surprised at the amount of material they have already at hand, if they will only take the trouble to inform themselves.

The full title of this work is "The National Formulary of Unofficial Preparations. Revised Edition, 1896," which may be obtained for a small sum in the form of a small separate book of about two hundred pages, or to be found in all the general and professional libraries incorporated in the closing pages of Volume 43, of the "Proceedings of the American Pharmaceutical Association."

*Neurodin* (acetyl-para-oxy-phenyl-urethane)—the antineuralgic and analgesic introduced two years ago—has received no attention whatever in the medical and pharmaceutical literature of the year.

*Nosopher* (tetra-iodo-phenol-phthalein)—the iodoform substitute—has received comparatively little attention during the year, either abroad or in this country, although the opportunity has been offered to obtain an abundant supply in the United States. Probably the most that can be said of its efficiency is that the results reported are "not unfavourable."

*Nutrose* is the name given to a new food preparation emanating from Germany, consisting of a neutral compound of casein with an alkali. It is reported to be a light, finely-divided, easily digested powder with a slight cheesy taste, readily dissolving in either warm milk, water, or broth without altering the taste of the fluid, and obtained by mixing dried casein with the proper proportion of sodium hydrate, then boiling the whole in 94 per cent. alcohol and finally drying. Dr. R. Stüve reports that it contains 13.8 per cent. of nitrogen. The dose is from 30 to 60 grammes (about 1 to 2 ounces) each day. It is too new a product to expect any extended clinical reports as yet.

*Orexin* (phenyl-di-hydro quin-azoline)—the appetite promoter and stomachic—although practically unnoticed the year previous, has received more attention during the past year. It is still difficult, however, to definitely locate the beneficial effects of such an agent, when so many conflicting elements enter into the necessary

accompanying treatment, for it is even often difficult to attribute as much as a contributing element to the improvement noticed.

*Orphol* is the name adopted for  $\beta$ -naphthol bismuth, which is recommended like  $\beta$ -naphthol itself as an intestinal antiseptic. It is reported to contain 26.5 per cent. of  $\beta$ -naphthol, and 73.5 per cent. of bismuth oxide. It is recommended in doses of 2 to 5 grammes (30.9 to 77.2 grains) to children, and 5 to 10 grammes (77.2 to 154.3 grains) to adults. There has been no systematic clinical study reported as yet.

*Paraldehyde* (officinal) hardly needs any additional testimony in its favour to prove its almost universal efficiency. However, individual experiences often bring out points of value, and either lead to more extensive use of the agent, or give warning of what not to do. Dr. D. W. Aitken, of Edinburgh, Scotland, writes:<sup>1</sup>

"In order to the better appreciation of the value of paraldehyde, it seems desirable to emphasise two points:

"1. It is a wonderfully innocuous drug, and where large doses are needed, it can be well tolerated.

"2. It is an exceedingly efficient calmative and hypnotic.

"To illustrate these points, the following cases may be cited:

"CASE I.—A female, aged eighty-one, melancholic, with suicidal tendency, was treated with paraldehyde after numerous other sedatives had been tried, with even injurious effects. This patient, for several months, took more than one ounce (once four ounces) in the twenty-four hours. The medicament not only gave great relief, but proved a most suitable exhibit, for the patient recovered and remained well for three years.

"CASE II.—A female, aged nineteen, had been epileptic from childhood. About two years ago, the fits became more frequent, often occurring two or three times a week. At this time she was anaemic, and also had chronic myringitis. Some improvement followed the treatment of these affections. The anaemia yielded to iron in the form of bromide, which, to a slight degree, beneficially influenced the fits. Some improvement also resulted from change of air. Still the convulsions occurred weekly. One peculiarity about the case was the prolonged aura. When the fit was to happen she felt, upon awakening in the morning, very ill, and would continue for hours in a most wretched condition. She could not describe any special sensations. Towards midday, or even in the afternoon, the general convulsions seized her. The wretched feelings never passed off without the occurrence of a

<sup>1</sup> Brit. Med. Journ., vol. i for 1896, p. 527.



severe fit. There was no suggestion of a Jacksonian type. In studying this case, the question of warding off the fits forced itself upon attention, seeing that so long an interval of warning was given. The idea of producing sleep then suggested itself, but how to avoid the danger of sedatives presented itself as a most serious difficulty. The favourable experiences of paraldehyde made one hope that the obstacle could be avoided. The result was most surprising. After the first dose of fifteen minims, she was sound asleep in five minutes, and having enjoyed some rest, she awoke refreshed, and with all disturbance gone. She has still the threatenings, but even they are not so frequent. She has, on several occasions, had intervals of one month. This fact, coupled with the much better general condition of health, shows that while securing the above-mentioned immense advantage, no bad results accrue from the treatment. For more than a year, she has had no fit except on one occasion, when no paraldehyde was in the house, and no one to send for it. She never needs to take more than thirty minims."

Mr. Frederick P. Hearder, M. B., assistant medical officer to West Riding asylum at Wakefield, England, in alluding to Dr. Aitken's note, emphasising the value of this agent as a hypnotic and sedative, wishes "to draw attention to a less generally recognised action of the drug—namely, as an antispasmodic in that most distressing malady, asthma.

"Dr. W. Mackie has a note on this action in the *British Medical Journal* of January 14, 1893, in twelve cases of spasmodic asthma. Since that date, I have exhibited the drug, with good effect, in about thirty cases of asthma, including ordinary spasmodic asthma, asthma with epilepsy, with morbus cordis, with renal disease, with chronic bronchitis, and in two cases of asthma with pneumonia.

"In the majority of the cases, relief was rapid and complete, and in the remainder the distress was lessened. The dose employed was forty-five to sixty minims, one dose being usually sufficient, a few cases needing a further dose of thirty to forty-five minims an hour or so later. The hypnotic action of the drug, also, is of great service, as in so many cases of asthma the attack comes on in the evening, or during the night.

"Using the above doses, I have never observed any untoward action of the drug, but, on the contrary, the breathing has gradually become easy and normal, the pulse steadied and strengthened, the patient falling into comfortable sleep.

"A disagreeable feature of the drug is that it scents the breath strongly for about twenty-four hours. A point, in dispensing, is that the addition of a few drops of alcohol renders paraldehyde perfectly miscible with water; any flavouring tincture can be used for this purpose."<sup>1</sup>

Dr. F. Whitaker, of Point Pleasant, N. J., in referring to Dr. Hearder's article, relates that at that time he "had a patient suffering from asthma; now *I have n't*."

"Mrs. C., aged sixty, a washerwoman, robust, was taken with asthma, after getting one heavy cold on top of another, until she had to go to bed. She improved under tonics and poultices to the lungs, and cough mixtures containing codeine, until I read the above-mentioned article, and decided to try paraldehyde for the remaining asthma. I gave her forty-five minims, and the dose was only taken once, when she was seized with vomiting, and all the signs of collapse. They did not send for me, and, being away the next day, I did not see her until the second day, when the daughter told me that her mother had fainted away several times, had been very weak, and in a cold sweat all the time for the two nights and day, and that, another physician going by, they had called him in on the second day. When I saw her, the asthma was apparently gone, but she looked as though she was thoroughly used up.

"If Dr. Hearder's cases were all so free from any unpleasant effect, why was it?"<sup>2</sup>

*Pellotin* is a new hypnotic recently brought to the notice of the medical profession by Dr. F. Jolly, of Berlin, Prussia. It is not prepared synthetically like its sleep-inducing competitors, "but is an alkaloid discovered in a species of Mexican cactus called *anhalonium*. The natives of Mexico are reported to swallow slices of this plant, to which they give the name of 'pellote,' and Dr. Hefter, of Leipzig, has now succeeded in isolating its soporific alkaloid. *Pellotin* itself is not soluble in water, but its hydrochlorate is extremely soluble. Its physiological action was first tried on frogs and then on mammals, which very soon became unable to stand or perform spontaneous movements, and shortly afterwards an increase of the reflexes was observed, followed by tetanic convulsions. This action of the drug on animals was not identical with that which Dr. Hefter observed in himself, for after taking five centigrammes (three-quarters of a grain), he became very

<sup>1</sup> Brit. Med. Journ., vol. i for 1896, p. 725.

<sup>2</sup> N. Y. Med. Journ. vol. lxiii, p. 591.

drowsy and ultimately fell asleep. The drug was then given by Professor Jolly to a number of patients in the neurological wards of the Charité hospital in Berlin. The first case was that of a man suffering from alcoholic neuritis, who, after an injection of four centigrammes became very drowsy, and one hour afterwards he fell into a sleep which lasted for four hours. Dr. Hefter had observed in himself a diminished pulse-rate, and the same symptom was perceptible in this patient, during the first hour of whose sleep the pulse fell to fifty-six per minute, rising again to seventy-six before the man awoke.

"Another patient, with multiple sclerosis, took five centigrammes during the afternoon, and after half an hour he also slept soundly for several hours. Similar results were obtained in a series of other cases. In patients suffering from tabes, the soporific action was equally satisfactory, but the pains returned after they woke. In delirium tremens, the effect was less prompt; in one instance, twelve centigrammes (equal to one and three-quarters grains), were needed only to tranquilise an excited patient, but no sleep ensued. In twenty cases of different kinds, the remedy was given as a hypnotic in the evening. Two centigrammes had no effect, but from four to six were efficacious in producing sleep, and no injurious consequences of any kind were observed. Some patients complained of giddiness, and declined to take the medicine, but the greater number did not suffer in this way. Professor Jolly says that six centigrammes (equal to about one grain) of pelletin are equal to one gramme (equal to fifteen and one-half grains) of trional, or two grammes (equal to thirty-one grains) of hydrate of chloral. The number of cases is yet too small to justify the formation of a definite opinion as to the new remedy, but it undoubtedly deserves further trial."<sup>1</sup>

*Pental* (tri-methyl-ethylene)—the anaesthetic for minor operations—is not having a very smooth path to travel. Although still used to a limited extent as the anaesthetic in minor short operations, such use is principally confined to dental practice. Much more has been reported on it this past year than the year previous. Fatal cases, however, make up the majority of such reports, and the proportion runs about as follows: 1 in 150, 1 in 149, 3 in 600, 2 in 238—the appalling mortality of 1 in every 162.

In dental practice, the approved position of the patient evidently should be recumbent and not sitting up in the chair, as vascular depression so frequently occurs.

<sup>1</sup> The London Lancet, vol. i, for 1896, p. 1760.

Many observers who have watched the physiological behaviour of this anaesthetic are now warning others against its use as being a dangerous cardiac depressant. Some even go so far as to claim that "pental will probably prove a most dangerous anaesthetic."

*Phenacetin* (para-acet-phenetidin), notwithstanding the exanthematous rash often produced, its too frequently reported toxic effects, and its high price, especially in this country, has come to stay. Its efficiency is unquestionable, but no doubt many of the modified and conflicting therapeutic results reported are due to the quite prevalent adulteration with acetanilid. This adulteration is largely due to the unreasonably high price charged for it in this country. The original German manufacturers have secured practically universal control of it by patented rights, and there is hardly any limit to the price they may exact, for it is such a valuable agent that the physician and public (abuse) must have it.

*Phenocoll* (amido-para-acet-phenetidin) the antipyretic—and particularly its hydrochlorate—continues to be in constant use. Conflicting reports are still made concerning its use in malarial fevers of various types, both in infants and adults.

Its value in pertussis has again been emphasised by Dr. A. Martinez Vargas, professor of pediatrics in Barcelona, Spain. He says that of all the remedies he has used in the treatment of pertussis, none has been so serviceable in lessening the intensity and the frequency of the paroxysms, and in preventing complications, as phenocoll hydrochlorate. Between January, 1894, and July, 1895, he used the remedy in forty-two cases, including a man of twenty-four, a baby of one month, with patent foramen ovale, an extremely rickety child, and a girl with broncho-pneumonia and hyperpyrexia. In all these cases, improvement began within twelve hours of the commencement of the treatment. In one the attacks had fallen from forty-eight to eight on the second day. Neither in the most delicate children nor in the most complicated cases did the remedy cause vomiting, collapse, or any disagreeable symptom. It was found that the best mode of administration was in sweetened water, in doses of one to two grammes (15.4 to 30.9 grains) per day. Absorption is rapid; elimination by the urine commences within twenty minutes of administration, and is completed in fifteen to twenty hours. The specific effect of phenocoll appears to be to diminish the severity and number of the paroxysms. Dr. Vargas believes it to be a sedative to the trigeminal and superior laryngeal nerve rather than a microbicide.



He utterly condemns the open-air treatment of whooping-cough, as not merely ineffectual, but dangerous.

*Piperazin* (di-ethylene-di-amine) is still extolled by many observers as an efficient remedy in gout. In fact, its chief use at this time is confined to this affection.

Dr. E. D. Mapother, Cavendish square, London, Eng., writes:<sup>1</sup>

“In October, 1894, I bore testimony for piperazin as a solvent for urates and a remedy in gout. Since then it has given satisfaction in most cases, but failed in a few, because, as I am now led to believe, it was combined with vegetable tinctures or infusions. It appears that with these it is incompatible. Other practitioners have reported adversely upon the drug, and probably because it was combined as above. Dissolved in distilled water or in tabloids and taken on an empty stomach, it will meet a fair trial. I intend to use it by subcutaneous injection for the dispersion of uratic deposits, which are so troublesome in the palms especially. It is regrettable that its price still ranges as high as ten shillings an ounce.”

Dr. H. Hager, of Neu-Ruppin, Prussia, writes<sup>2</sup> his personal experience as follows:

“My gout appears to be partly hereditary and partly the result of my sedentary habits. It is remarkable that the malady only showed itself in my eightieth year, but to make up for this it now twitches my person all the more virulently. After trying other remedies I essayed piperazin, and I may say at the outset that I did well thereby. After using the remedy continually for three or four weeks, I at last experienced the desired result, the pains and serious swellings having alike subsided, so that I can walk about in my room again without crutches. I eschew acid foods and drinks; meat I eat sparingly.

“My experience shows that, especially in hereditary gout, piperazin must be taken for a long time, as a short treatment has uncertain results, and is often of little or no use. A prolonged employment of the remedy is without any ill effects on the body, and even doses of fifteen grammes three times a day do not injure the stomach. When the swellings diminish it is well to continue piperazin for some time in reduced doses of from ten to twelve grammes three times a day. Piperazin may be suitably taken with soda-water. The daily dose should be divided into several portions, in order that its elimination may not proceed so soon as

<sup>1</sup> The London Lancet, vol. i for 1896, p. 384.

<sup>2</sup> The Chem. and Drug., vol. xlix, p. 91.

when a single large dose is taken. I have noticed a considerable increase in the efficacy of piperazin by adding, after two or three weeks' applications, a diuretic to the dose. Excellent for this purpose is a decoction of bean pods, which can be taken either with weak coffee or with piperazin and milk, or with piperazin only. From four to six drachms of bean pods may be taken daily, but only in cases where the diuretic action of piperazin slackens considerably or ceases altogether. My recent removal from Frankfort-on-the-Oder to Neu-Ruppin I have been able to carry out without the slightest inconvenience, which was quite unexpected."

The comparative experimental results of the action of lysidin and piperazin as uric acid solvents have been alluded to under the head of the former.

A new proprietary compound with lithium has been introduced, which is assumed to act more effectually in this combination than separately. However, the proof will have to be very convincing to make this claim good.

Toxic symptoms have been reported against piperazin, and as they may be chiefly due to the quite large range in dose, surely a uniformity in the product used must be relied on. On general principles, all comparative data should be obtained with products of the same therapeutic value.

*Pixel*, the tar soap "cheap disinfectant" of Dr. Raptchevski, alluded to here for the past two years, has quite gone out of use; but the writer has had his attention called to the fact that Dr. James E. McKeon, of Medford, Mass., has for many years past made up a cough mixture, known by this name for the want of a better, which has had at least a local reputation of some value, and no doubt has spread as fast as it has become known. He apparently does not in any way desire to restrict the use of his formula; but in strict justice to him, all credit should be accorded him for the successful working out of the proportions to produce the best effects. Unless some one will suggest a better name to Dr. McKeon, Syrup of Pixel Compound will have to answer. The formula and mode of preparation are as follows:

Oil of tar ( <i>pix liquida</i> )	.	3.7 c. c.	(1 fluid drachm)
Fluid extract of <i>ipecac</i>	.	15.0 "	(4 " )
Camphorated tincture of opium	30.0 "	(1 fluid ounce )	
Glycerin	.	60.0 "	(2 " )
Syrup of wild cherry	.	120.0 "	(4 " )
Distilled water	.	150.0 "	(5 " )
White sugar	.	q. s.	

Rub up the oil with 15.5 Gm. (4 drachms) of magnesium carbonate, add the fluid extract of ipecac, camphorated tincture of opium, and water in order,—each gradually,—and then add the syrup and glycerin. Incorporate all well together and filter. To the filtrate add enough sugar to make the product measure 473 c. c. (1 pint).

*Pyoktanin* (methyl-violet)—the anilin dye “pus destroyer”—is still before the medical profession, but with a varied history. In affections of the eye and ear it is reported as “occasionally very satisfactory, but more often disappointing, if not indeed aggravating.” Many, no doubt, have discarded it entirely.

Dr. C. Höring, of Stuttgart, Germany, however, speaks strongly in its favour, used as a local application several times daily in the treatment of diphtheria, even when antitoxin is used internally in the severer cases.

Dr. J. Griffith-Davis read some notes on “Its Uses in Malignant Diseases”<sup>1</sup> before the Alumnae Association of the Woman’s Medical College of Pennsylvania in May last, giving the clinical history of six cases, which will be instructive to those who are interested in this agent.

A compound is now offered, called *pyoktanin-mercury*, which is reported of service in chronic gonorrhoea. The reports of this at this time come chiefly from use in the hospitals of Port Said and Cairo, Egypt.

*Pyrantin* is the name given to a new substance obtained by the reaction between phenacetin and succinic acid (the acid obtained by distilling amber). Chemically, it is para-eth-oxyl-phenyl-succinamic acid. It is prepared by melting the two ingredients together and finally boiling with alcohol, from which it crystallises out in the form of colourless needle-like crystals very sparingly soluble (1,317 parts) in cold water and in about 84 parts of boiling water. Its alkaline salts, however, are all soluble.

Its action is antipyretic, apparently resembling phenacetin, but is claimed by Prof. A. Piutti, who introduced it, to be free from the disadvantages of phenacetin and other analogous antipyretics.

Professors Renzi, of Naples, and Di Giovanni, of Padua, Italy, both report finding it especially useful in rheumatic fever in doses of 1 to 3 grammes (15.4 to 46.3 grains) per day. It appears to have no unfavourable effect on the heart or respiratory organs, and causes no disturbance of the digestion.

*Pyrantin* has no relation to pyretine, alluded to here for the past two years as being the largely-advertised antipyretic and analgesic

<sup>1</sup> N. Y. Med. Journ., vol. lxiv, p. 482.

mixture of acetanilid, caffenin, calcium carbonate, and sodium bicarbonate.

Pyrantin is too recent an agent to expect any extended clinical reports as yet.

*Quinosol* (chinosol) is the name given to a new neutral antiseptic compound of oxyquinolin with tricresol, introduced as a substitute for carbolic acid, corrosive sublimate, and lysol. It is said to contain 33 per cent. of quinolin and 17 per cent. of tricresol. It is presented in the form of a powder, and is readily soluble in water. It has a slight, but not disagreeable, odour, and is claimed to be non-toxic, and without irritating or caustic effects.

Its chief use has been in the gynaecological practice of Prof. R. Kossmann, of Berlin, Prussia, who reports favourably upon it. He states that a 1 to 4,000 solution prevents the development of the *staphylococcus pyogenes aureus*. A minor objection to it appears to be the yellow staining of the skin, linen, and instruments; but such may be easily removed with water. It is not only used in solution, but as a dusting powder on wounds.

The results of Professor Kossmann have been questioned by other observers, and there has been more or less of a controversial spirit started concerning the claims of both sides. This is not scientific investigation; and whereas the truth about this agent as well as any other will no doubt ultimately be established, still it does neither side any good to talk or write indiscreetly, as progress is not made in that line.

This agent has recently been given another name, "kresochin."

*Roentgen Rays* have become such household words throughout the whole scientific world that it would seem rather superfluous to attempt to explain in detail here the phenomena and results obtained; but if one looks back over the various articles and paragraphs which have appeared in print up to the present time, it will be evident that little has appeared in a connected way, giving the various progressive steps by which the present results were reached. Most of the articles and extracts have been more or less disjointed, and generally apply to a special branch or application, giving little of a preliminary historical explanation, but trusting to the fact that all such information has been obtained elsewhere. It will, therefore, perhaps not be out of place to reprint here, for the sake of future reference, such an account as given by Mr. A. D. Risteen, associate editor of *The Locomotive*:

"History does not record a case in which a scientific discovery has aroused a more sudden and widespread interest than that an-



nounced a short time ago by Dr. Wilhelm Konrad Roentgen, of Würzburg, Germany. His discovery was (as everybody knows) that it is possible to produce a hitherto unknown kind of rays, which resemble light rays in some particulars, but which are nevertheless quite different from them in many important respects. They cannot be directly perceived by the eye, but they are capable of affecting a photographic plate. Dr. Roentgen, being of a mathematical turn of mind, modestly designated his rays by the letter 'X,' to signify that they were 'unknown.' Doubtless some better name will be found when their true nature has been discovered; but for the present the scientific world prefers to know them as 'Roentgen rays.'

"Much has been written about these rays in the scientific and popular press, so that nearly everybody may be supposed to have a fair idea of the whole subject; but many of the articles that have appeared have been written by persons who had no actual experimental knowledge of the discovery, and the result is, that the real facts have in many cases been confused with mere idle speculations having no sound foundation. For this reason it has been thought well to prepare for *The Locomotive* an article which should set forth the main facts of the discovery, as at present known.

"In the first place, it is necessary to have a clear understanding of the 'Crookes tube,' that is used to generate the rays, and to gain such an understanding we must know something about the molecular theory of gases. A gas, according to the best modern ideas, consists in a vast number of little elastic particles called molecules, which are flying about in all directions with great speed, and incessantly colliding with one another, and bounding apart again. The average distance that these particles travel, between successive collisions, is called their 'average free path.' In atmospheric air, under ordinary conditions of temperature and pressure, the average 'free path' of the molecules is only about .000,003 of an inch; and in hydrogen gas, under the same conditions, the average 'free path' is about .000,007 of an inch. By lessening the density of the gas in a given enclosure, by means of an air pump, we can increase the average 'free path,' however, as much as we please. If a great number of bullets were fired at random into a forest, they would not go so far, on an average, if the forest were very dense, as they would if the trees were only thinly distributed. The same idea holds true in a gas; and if we should pump out all of the air from a glass bulb except, say, the

millionth part of what was originally there, the average 'free path' of the molecules that were left would be a million-fold greater than before. That is, the average 'free path' would become three inches, instead of only .000,003 inch, as at first.

"A vacuum of this degree of perfection cannot be obtained by means of the ordinary piston air-pump, and recourse has to be had,

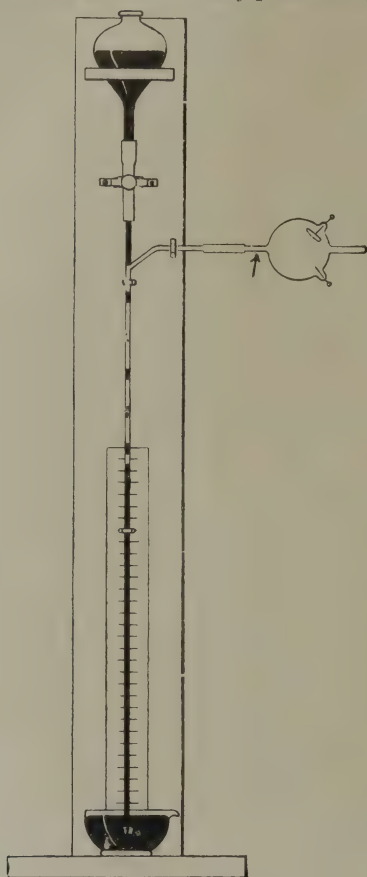


FIG. 1—A Sprengel Pump.

for this purpose, to some form of mercury pump. The form devised by Sprengle is illustrated in Fig. 1. It consists in a long, upright glass tube, through which mercury is allowed to flow, drop by drop. A side pipe leads out from the long tube to the apparatus from which the air is to be removed. As the mercury falls down through the upright tube, a little air is carried away, each time, between the successive drops; and after a while the exhaustion becomes very perfect. The pump is very positive in its action; and as it contains no valves of any sort, leakage is practically impossible, if the connections are once made tight. When a satisfactory vacuum has been obtained, the apparatus that is being exhausted is sealed up by means of a blow-pipe flame, at the point indicated by the arrow.

"It might be thought that when all the air in a glass bulb had been removed, except the last millionth, it would be impossible to detect that remain-

ing fraction by any means at our command. Such, however, is not the fact. A vacuum of this sort still contains about 100,000,000,000,000 molecules in every cubic inch of its volume; and hence it is very far indeed from being a 'vacuum' in the

metaphysical sense of the word. In fact, the English physicist, William Crookes, showed that when the 'free path' of the molecules is measurable in *inches* (as it is in these high vacua), a great many new and interesting phenomena may be observed. In



FIG. 2.—A Crookes's tube in operation.

the course of his experiments, he constructed bulbs of the greatest variety of shapes, one of which is shown in Fig. 2. This bulb consists of a sphere of glass, into one side of which a round, metallic electrode is inserted, as shown at the right in the figure. Three

other electrodes, consisting simply of straight wires, are melted in at other points, as shown; and the whole tube is exhausted to about one one-millionth of the original pressure, as already stated. When the electrode on the right is connected with the negative pole of a powerful electrical apparatus (either an induction coil or a static machine) capable of giving a voltage of 100,000 volts or more, the other pole of the machine being connected with any one of the remaining three electrodes of the tube, the tube assumes a very beautiful appearance, which can only be rudely suggested in the engraving. The molecules which chance to come in contact with the disk-shaped electrode are electrified negatively, and are violently repelled towards the centre of the bulb. If the air within the bulb was of the ordinary density, these molecules that fly off from the electrode could only travel about three one-millionths of an inch before colliding with their neighbours; but in the tube as actually constructed with the high vacuum within, they can travel clear across, so as to strike the glass on the opposite side. The course of these molecules, as they stream across the tube, is indicated by a pale, purplish beam or streak of light, which is known as the 'cathode ray;' and where they strike against the glass, they cause it to shine with considerable brilliance, as indicated by the bright spot on the left. The 'cathode ray' is unchanged in appearance, whether the positive wire of the electrical machine is connected at the lower electrode, or at the upper one, or at the one on the left.<sup>1</sup>

"To show the reality of the stream of flying particles that are traveling across the tube along the course of the 'cathode ray,' Crookes devised a great many forms of apparatus, one of which is shown in the diagram in Fig. 3. It consists of a glass tube within which there is a very light paddle-wheel which can roll back and forth on a pair of glass rails. When this tube is connected with the electrical machine, as indicated in the diagram, the 'cathode ray' proceeds from the left-hand electrode horizontally towards the right; and when the swiftly-moving molecules that compose it beat against the vanes of the paddle-wheel, the wheel is made to rotate so as to roll down the tube toward the right-hand extremity of the rails. If the electrical machine be then reversed so that the negative terminal is at the right, the wheel may be made to revolve in the opposite direction, and roll back to its starting

<sup>1</sup>"We are well aware that the explanation of the 'cathode ray' that we have here suggested is by no means universally admitted to be true. It is the one suggested by Crookes himself, however, and as no better explanation has yet been offered, we have no hesitation in repeating his theory in regard to it."



point. In this form of tube, as in the preceding, it will be noticed that it is the *cathode* (or *negative* electrode) that is primarily concerned in the production of the phenomena. The positive electrode, or anode, appears to be of minor importance. This is true of all Crookes's tubes, and is one of their most marked features.

"As might naturally be supposed, these strange phenomena of the 'cathode ray' have attracted very wide attention among scientific men, and have formed the basis of numerous interesting experimental researches. Of these various researches, one of the most striking is that carried out by the young German physicist, Lenard, who was assistant to Dr. Heinrich Hertz at the time of that philosopher's death. Lenard seems to have been impressed with the idea that it is possible to make the 'cathode ray' come out of the vacuum tube, into the open air. The explanation of

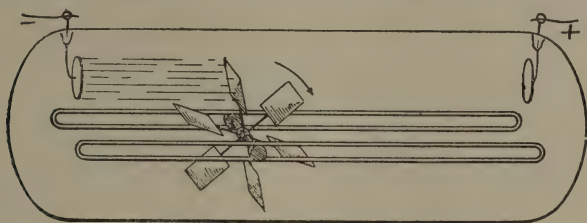


FIG. 3.—Crookes's "Railway" tube.

the 'cathode ray' that we have given above, would seem to preclude any such possibility; but Lenard worked at the problem patiently until he at last found that if the vacuum tube be provided with a very thin pane of aluminum, at the place where the 'cathode ray' strikes it, his hopes could be realised, and the 'ray' could be made to continue through the thin sheet of aluminum, so as to be visible outside of the tube. Lenard's apparatus is shown in Fig. 4. It consists of a vacuum tube, exhausted to about the millionth of one atmosphere, and provided with two electrodes, the positive one, or 'anode,' being composed of a short piece of brass tubing, while the negative one, or 'cathode,' consists in a small circular disk, as shown. When the electrical machine is in action, the 'cathode ray' is seen streaming away to the left as a faint horizontal beam of light (represented in the diagram by the parallel broken lines). The tube is closed at the left by a metal cap, the central part of which consists of the thin piece of aluminum foil, already referred to. The whole apparatus was surrounded by screens, as indicated, so as to shut off all the light

that proceeds directly from the tube itself. When the apparatus, thus arranged, is set in action in a darkened room, the 'cathode ray' is seen to emerge into the air at the left of the tube, in the form of a diffuse brush of light, as represented by the diverging broken lines. *Lenard found that this brush of light is deflected by a magnet.* He also found that it affects a photographic plate, and he investigated the transparency (or opacity) of various substances for it, and gave a table of the results. One of his experiments is strikingly similar to Roentgen's. Finding that glass is relatively opaque to the 'cathode ray,' and aluminum relatively

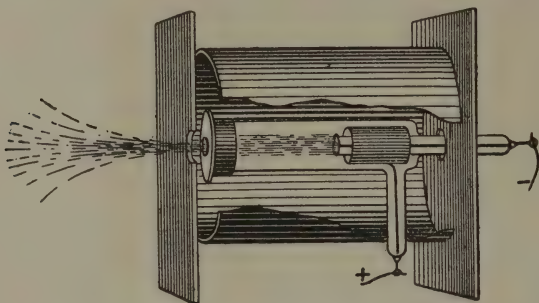


FIG. 4.—Lenard's apparatus.

transparent, he placed a photographic plate inside of an aluminum box, and laid a piece of glass upon it. He placed this apparatus so that the 'cathode ray' should fall upon it, and after a time he developed the plate, and found that the 'cathode ray' had passed through the metallic box and affected the sensitive plate everywhere except where it had been protected by the comparatively opaque slip of glass.

"Roentgen had been repeating the experiments of Crookes, Hittorff, Lenard, and others, and in the course of his work he was led to the discovery that the vacuum tubes produce *two* kinds of radiation, one being the previously known 'cathode ray,' and the other the now famous 'X-rays.' The X-rays resemble the cathode ray in some particulars, but differ from it in the important respect that *they are not deflected by a magnet.* Roentgen tried to find out what *part* of the vacuum tube his newly-discovered rays came from, and he was led to the conclusion that they are generated at the spot where the cathode ray strikes against the inner surface of the glass wall of the vacuum tube. This idea is illustrated in Fig. 5, which shows, at the same time, the way in which Roentgen

pictures are taken. A plate-holder containing a sensitive plate is placed upon the table, the side of the plate-holder remaining closed throughout the experiment (it being transparent to the X-rays, although opaque to ordinary light). Upon the slide of the plate-holder the operator places the object whose image he wishes to obtain, and the Crookes tube is suspended a few inches above the whole in such a way that the cathode ray is directed downward towards the plate-holder. The electrical machine is then set in action for from twenty minutes to an hour, according to the exposure that is considered necessary, and the sensitive plate is afterward developed in the dark room in the usual way. A shadow picture of the object is then found to have been produced upon the plate through the seemingly opaque slide of the plate holder. The curious effects obtained in the Roentgen shadow pictures are due simply to the fact that substances that are opaque to light may be transparent to the X-rays, and *vice versa*.

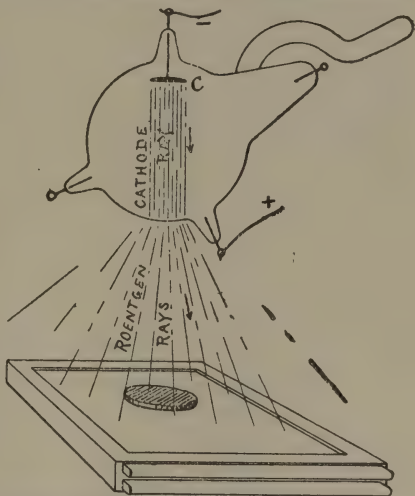


FIG. 5.—Showing the relation of the Roentgen rays to the Cathode ray.

“Professors Rowland and Carmichael have carefully investigated the *source* of the X-rays, and their conclusions concerning this point differ widely from those reached by Roentgen himself. They find that in some tubes the rays emanate from the *anode*, or positive electrode, and that the cathode ray has nothing to do with them. So broad a difference as this in the results reached by different competent observers suggests that in all probability the *form* of the tube has something to do with the place where the rays originate.

“We need say nothing about the application of X-ray pictures to surgery, because that phase of the subject has been discussed in great detail by the press in general. Our own interest in the discovery, apart from the purely scientific interest that it must arouse in every educated person, lies in the possibility it offers of detecting flaws, blow-holes, and other imperfections in metals;

but at present this can only be done on a small scale, with very thin specimens. Iron and steel are so opaque that a far more powerful source of the X-rays must be found before the method can be successfully applied to braces and manhole frames.

“Various suggestions have been made concerning the *nature* of the X-rays, but none of them have been proved to be true. The most that can be said is, we think, that the X-rays are not in any sense identical with *light*. All the kinds of light that we know about exist in sunlight; and yet there are no X-rays in the sunlight, so far as has yet been discovered. It is true that their existence in the sun's light has been repeatedly announced, but the various ‘discoveries’ of this sort that have been made will not bear examination. A plate-holder that gives a shadow picture in sunlight simply has too thin a slide. If a piece of yellow paper and a piece of glass be exposed to the sun on such a plate-holder, a strong image is cast by the yellow paper, and hardly any at all can be found under the glass. This shows that it is ordinary light that does the work in this case. If the X-rays did it, the *glass* would cast a strong shadow, and the image of the *paper* would not be distinguishable.

“The first fact that Roentgen discovered about his rays was, that they are capable of exciting a sort of fluorescence or phosphorescence in certain substances. This led immediately to the construction of a fluorescent screen, on which the X-ray images could be seen directly by the eye. Roentgen's lead in this direction was followed by Professor Salvioni, of Rome, who devised a practical instrument for this purpose, which he called the ‘cryptoscope.’ Mr. Edison has since done good work in this direction, still further improving Salvioni's apparatus by substituting tungstate of calcium, as the fluorescent substance, for the compound of barium that Roentgen and Salvioni had used.

“In closing, we must caution our readers against the sensational ‘discoveries’ that have been reported with such frequency by the daily press. The few real facts that have been learned about the X-rays since Roentgen's first paper appeared are all of a purely scientific character, and not one of them would have the least interest to the general public. The most conspicuous thing that has been done, from the popular point of view, is that the *technique* of the exposure and development has been much improved, so that we can get better pictures now than we could at first.”<sup>1</sup>

<sup>1</sup> The writer desires to take this additional opportunity to again thank not only Mr. A. D. Risteen, but also the publishers of *The Locomotive*, for their courtesy and generosity in not only permitting the use of their article, but in presenting the above cuts for illustration.



Now as to special applications, this discovery is no doubt likely to open up a most promising field so far as medicine and surgery are concerned. Already many startling results have been accomplished, not in perfection, of course, but surely sufficiently satisfactory to furnish an insight to the possibilities. Only a few of the prominent preliminary accomplishments can be mentioned here. For instance, the difference between a biliary and a uric acid calculus has been shown in their permeability to these rays. We can readily speculate on the important possibilities of the further study in this line alone. The measurement of the pelvis, the location of the various organs of the body, as well as bullets and other foreign bodies within the body, with fairly satisfactory precision, are all too familiar to the practitioner to need repetition here, and many observers are fast reporting more gratifying exactness.

Prof. F. Ottolenghi has suggested<sup>1</sup> "that the supposed power of seeing through opaque media, etc., which is claimed by certain hysterical, somnambulistic, or trance subjects, may have some objective basis in the light of the recent discoveries of Roentgen. The author supposes that in the more or less extra-normal conditions of the nervous system obtaining in this class of patients, the retina may be sensitive to the X-rays, which, under ordinary conditions, fail to produce any impression. This suggestion is only meant by the author to apply to such cases as are inexplicable in any other way," but undoubtedly it is a fruitful field for the specialist to investigate.

"Dr. Robert L. Bowles read a paper before the Camera club, on March 12, on 'Roentgen Rays and Reflected Solar Light.' He found that reflected luminous or photo-chemical rays, as well as the X-rays, penetrate the human skin into the deeper tissues beneath, and produce great and important changes. That it is light, and not heat merely, which causes sunburn, he proved by the following facts: In Alpine climbing, the sun on snow burns more quickly than on rocks or heated valleys, although the heat necessarily must be occupied in melting the snow, and thus becomes latent. Glass and iron workers, though exposed to a much greater heat than is experienced on a sunny snow slope, do not become sunburned. Professor Tyndall, when experimenting with the electric light at the North Foreland lighthouse, was more sunburned than in any Alpine snow, although there was no snow or heat at the time. Dr. Bowles's conclusions were: That heat *qua* heat is not the

<sup>1</sup> Epitome Brit. Med. Jour., vol. i for 1896, p. 53.

cause of sunburn ; that it is most probably caused by the violet or ultra-violet rays ; that these are modified by snow and by altitude ; that sunburn, snow-blindness, and sunstroke are caused by the penetrating effects of luminous and actinic rays ; that rays from the electric light produce the same effects as rays reflected from snow ; that various pigments, chiefly those containing red and yellow, stop or alter reflected luminous rays ; that freckles, which are the milder effects of luminous rays, stop the penetration of those rays through the skin ; and that the sometimes very serious inflammatory changes in sunburn and 'summer eruptions' are due to the penetration of reflected luminous rays through the skin to the deeper tissues beneath. His observations lead him to conclude that the X-rays are modifications only of ordinary light, and that their further elucidation must go hand in hand with a further inquiry into the profound changes caused by reflection."<sup>1</sup>

It looks probable from reports already made that this discovery will prove of greater use in dentistry than in surgery, for, as pointed out by Mr. F. Harrison, of England, the methods only need simplifying to enable dentists to observe in their patients what was only possible until recently in the dead subject. The genesis of the teeth, the construction of artificial crowns, the anomalies of roots, the difficult eruption of wisdom teeth, and many other conditions of organs which are enveloped in tissue that is opaque under ordinary conditions, are said to become visible by the illumination of the X-rays. For practical purposes, of course, a cryscope will be found simpler in use, and more generally satisfactory than the photographic process, and Mr. Harrison proposes to experiment with an apparatus of that description.

Dr. W. J. Morton, of New York, points out that by these rays each errant fang is distinctly placed, however deeply imbedded within its alveolar socket; teeth before their eruption stand forth in plain view; an unsuspected exostosis is revealed; a pocket of necrosis, of suppuration, or of tuberculosis, is revealed in its exact outlines; the extent and area and location of metallic fillings are sharply delineated, whether above or below the alveolar line. The pulp chamber is beautifully outlined, and erosions and enlargements may be readily detected.

Not many months ago, it was too hurriedly claimed that much had been accomplished by the application of these rays to various forms of microbes for their destruction, but the claims were apparently too general, for whereas a great deal may very reasonably be

<sup>1</sup> The London Lancet, vol. ii for 1896, p. 492.

expected, possibly in the very near future, from what is already demonstrated in this line of research, some of the results have been temporarily disappointing. At a recent meeting of the Paris Academy of Sciences, a paper by M. Lortet, professor at the Lyons Faculty of Medicine, on the subject of "The Action of the Roentgen Rays on Certain Microbes," was read by M. Chauveau. After inoculating snakes with the Koch bacillus, M. Lortet submitted the point of inoculation, after a lapse of several days, and on various occasions, to the X-rays. He has found that each time there was a marked improvement in the general state of the subject submitted to the experiment. M. Chauveau added that he reported the result of M. Lortet's researches under all reserve, but mentioned that animals which had been inoculated, but not subjected to the Roentgen rays, suffered the usual result of the inoculation. M. Barthelot inquired if M. Lortet had experimented on subjects suffering from erysipelas, this malady presenting superficial and visible manifestations, and he considered that it would be interesting to follow the evolutions of a case under the influence of the X-rays. M. Chauveau could not say if such an experiment had been made, and he considered the researches too incomplete yet to form a definite opinion upon them.<sup>1</sup>

In its application to botany, Mr. George J. Burch reports<sup>2</sup> that by suitably arranging the exposure and development, it has been found possible to show the ovules inside the ovary in an unopened bud, the seeds within a seed vessel, and even the veins upon the white petal of a flower. Apparently these results are due to refraction and reflection of the rays, when the incidence is sufficiently oblique. Similar indications are visible in a photograph of a fish's eye prepared by Mr. Yetts, in which there is a narrow dark shadow that can only be due to internal total reflection, whilst the feathers are seen in a picture of a bird by Mr. Soper, and a print of a foot, developed by Mr. Herbert, shows the fabric of the stocking. Mr. Burch says he is directing his experiments with the view of photographing the soft tissues of the human body.

Some phenomena observed by Mr. T. C. Porter, of Eton college, and also reported in *Nature* (vol. liv, p. 110), seem to indicate that the rays are of two kinds. To one kind, designated  $x_1$ , flesh is fairly transparent, and bone opaque, but to the others, distinguished as  $x_2$ , flesh seems nearly, if not quite, as opaque as bone. Under ordinary circumstances, in the cold, most of the rays emitted

<sup>1</sup> The Chem. and Drug., vol. xlix, p. 5.

<sup>2</sup> *Nature*, vol. liv, p. 111.

from an excited tube are  $x_1$ , but if the tube be heated, the proportion of those is diminished, and more of  $x_2$  are emitted. Wood and paper seem fairly transparent to the  $x_2$ -rays, but glass is very opaque, and aluminum much more opaque than to the  $x_1$ -rays. It is possible that the  $x_2$ -rays may be related to the  $x_1$  in the same kind of way that red is related to violet light.

It is definitely claimed that brick-dust can be detected in cayenne pepper, sand in spices, and chalk in flour. Mr. W. Arnold, of Ansbach-Erlangen, Bavaria, "has tried whether X-rays could be used to detect impurities in food stuffs and other substances, and he points out that, although carbohydrates, fats, and aniline colours are transparent to the rays, yet small differences are to be detected, and the vegetable oils can thus be classified as follows: 1, castor; 2, almond; 3, olive; 4, poppy; 5, sesame; 6, cottonseed; and whilst the difference between 2 and 5 is scarcely noticeable, castor-oil was considerably more transparent than the others. Butter was the least transparent of the fats, then lard, the most transparent being margarine. Mixtures of various fats in different proportions also behaved differently as regards the X-rays. With vegetable matter, it was found that the transparency decreased with the increase of ash, and saffron absorbed the least, but pepper the most, rays. Adulterations of spices with earths, ochre, sand, etc., or of flour with chalk, fluor-spar, or heavy spar, were clearly recognisable. Gelatin stained with aniline dyes could be arranged in the following order: 1, methylene blue; 2, cyanine; 3, methyl violet; 4, eosine; 5, fuchsine; 6, mode brown; 7, orange; 8, chrys-aniline; 9, fluoresceine; so that the brightest colours are the least transparent. With wines, the transparency decreased with the increase in the amount of sugar. With all liquids, the absorptive power increased with the specific gravity; in the case of the elements, with the atomic weight. The acid radicals had considerable influence on salts and arseniates; sulphates and phosphates show much greater absorption than chlorides."<sup>1</sup>

"The queen of Portugal, who is celebrated as a pursuer of the various fads of the hour, has been experimenting with this discovery. She has detailed the ladies of her court to serve as subjects, and has been making pictures of their skeletons. It seems that these gave such an alarming insight into the distortion wrought by tight lacing, that the female nobility of Portugal rushed to order gowns six or eight inches wider in their belt measure. It would be a curious instance of the unexpected turns of

<sup>1</sup> Pharm. Journ., vol. iii, fourth series, p. 13.



human affairs, if tight lacing denounced in vain by medicos and moralists, should finally be suppressed by Dr. Roentgen's invention, and fashion should turn to the Venus de Milo as her ideal of figure."<sup>1</sup>

*Resorcin* (officinal) has probably been used less, if anything, during the past year. However, it is still claimed of value by the dermatologists.

*Resorcinol* is the name given by Professor Biélaïeff for the compound resulting from melting together at 104°-110° C. (219.2°-230° F.) equal volumes of resorcin and iodoform. First the resorcin melts and then slowly combines with the iodoform. The product when powdered is reddish-brown in colour, with a definite, but not disagreeable, odour, is only partially soluble in water, but completely so in ether. Its advantages are that it is less caustic than resorcin, and not only has a less disagreeable odour than iodoform, but has less toxic action.

Professor Biélaïeff recommends its use especially in cases where frequent changes in wound dressings are undesirable and in suppurating wounds where disintegration of tissue is marked.

*Saffron* as a medicinal agent is still being discussed, and many continue to claim that it is practically useless, and, therefore, should be dropped. The committee now working on the new British pharmacopoeia has been appealed to, by Indian practitioners, to omit it from the new edition, and thus exclude it from any preparations which have hitherto contained it. The United States pharmacopoeia of 1870 dropped it from the composition of the old Huxham's tincture (and have not restored it since), but retained it in the body of the 1890 edition simply for the purpose of making a tincture. Although many claim it was of little avail in Huxham's tincture, still there are others who maintain that it has its appropriate effects therapeutically, and that sufficient investigation was not made before its erasure. In verification of this, all that is necessary to do is to conscientiously compare the therapeutic effects of the two preparations, in the frequent cases for its application, which every practitioner must have in his practice. One of the principal arguments for dropping its use is its increasing high price.

The crocus crop of Gatinais, France, has been badly affected this year by an attack of a fungus (*Rhizoctonia violacea*), which is one of the reasons for the high price. Prof. F. Heim, of Paris, suggests the cultivation of *Iritonia aurea*, poppe, an iridaceous

<sup>1</sup> Medical News, vol. lxi, p. 328.

plant, the stigmata of which contain the same colouring principles as saffron. He has examined the proposed saffron substitute, and finds that the crocin, crocose (a sugar), and crocetin are identical with those of saffron, and he has also obtained from the *tritonia* stigmata a substance analogous to the colourless crystalline and bitter glucoside of saffron—picrocroceine. Professor Heim is convinced from all his observations that the culture of *tritonia aurea* would be successful, as it is not attacked by the fungus. The plant is a native of Central Africa and the tropics. It is hardy, and would stand the French climate well.

*Salaktol* (salactol)—one per cent. of hydrogen dioxide solution, sodium salicylate, and sodium lactate (proportions not given)—has not been heard of in the medical and pharmaceutical literature of the year.

*Saligenin* (produced synthetically from phenol and formaldehyde) has received no attention during the past year.

*Salipyrin* (reported to be a true salicylate of antipyrin) has been practically unheard of during the past year. Nothing has yet appeared to warrant the retention of this separate, made-up compound.

*Salol* (phenyl salicylate)—officinal—continues to be used more largely in surgical practice, and its study has been pretty closely confined in that line.

Professor Manceau points out that the powerful action of salol as against microbes is due to its splitting up, in any alkaline medium, into salicylic and sulpho-carbolic acids. Its internal use requires caution in fevers, in acute or chronic diseases of the kidney and arthritic cases with cuticular congestions. By utilising its property of melting at 42° C. (107.6° F.), Drs. Reynier and Isch-Wall have combined it with various other microbicides, and found a number of new antiseptics of which the type is liquid iodoformed salol.

At a meeting of the Paris Chirurgical society on April 1 last, Dr. Reynier called attention to the use of this combination. He said:

“Three years ago, I laid before you the results of my experiments with a mixture of salol and iodoform, for the purpose of rendering aseptic infected ragged cavities, such as cold abscesses, fistulous paths, and large bony cavities, referring to several cases in which I had obtained good results from this method of treatment. Since then I have on many occasions successfully resorted to injections of iodoform salol in the treatment of osseous tubercu-

losis, filling up the cavities resulting from curettage of the affected bones with the mixture of salol and iodoform, as described.

"One of these cases is particularly interesting, because I had an opportunity of examining the region treated in this manner two years after the injection of iodoform salol. The patient was a man operated upon at the Tenon hospital for the relief of diffuse tuberculosis of the tibia. On the occasion of my first operation, I merely plugged the cavity with iodoform gauze, and the patient was discharged two months later, apparently cured, but within a few months he returned with a fresh abscess, which again necessitated having recourse to curettage. This time I filled up the cavity with a mixture of salol and iodoform. Union was obtained by first intention, and the patient left the hospital, restored to health, a fortnight after the second intervention. Two years later he was admitted into Professor Le Dentu's wards with diffuse tubercular lesions of the tibia of such a character as to necessitate amputation of the leg. When this operation was performed, the plug of iodoform salol introduced at the time of my second operation was discovered, and the cavity containing it was found to be free from disease."<sup>1</sup>

In discussing these remarks, Dr Félizet said:

"I have experimented on dead bodies with injections into the areolar tissue of the great trochanter, without being able to penetrate further than three centimeters with a pressure of one hundred and twenty millimeters of mercury. I do not believe, therefore, that the action of the iodoform salol with which Dr. Reynier fills up a bony cavity can extend very far in the osseous tissue. It doubtless simply remains in the cavity as an aseptic foreign body."

Finally Dr. Routier ventured to remark:

"In my opinion, the success obtained by Dr. Reynier is due to his careful curettage of the diseased parts, rather than to any beneficial action of the iodoform salol."

Professor Berman recently gave an account of Labadie-Lagrave's method in using a mixture of salol and antipyrin as a haemostatic in intrauterine applications. The mixture is dark brown in colour and is obtained by heating the two ingredients together. The application is made two or three times in succession, and no pain or disagreeable effects have been noted. Rarely is a second series of applications necessary. Better results are reported with this mixture than with any other mode of treatment. In fungous endometritis, curetting should precede the applications. The mixture

<sup>1</sup> The Medical Week, vol. iv, p. 190.

appears to be not only a haemostatic but an antiseptic, and prevents relapses.

Prof. W. E. Fothergill, of Edinburgh, Scotland, gives a tablespoonful three times a day of the following mixture in post-partum irritability of the bladder:

Salol . . . . .	7.5 grammes (2 drachms)
Tinct. of hyoscyamus . . . . .	7.5 " (2 " )
Infusion of buchu sufficient to make 175.0 Cc. (about 6 fluid ounces)	

In the treatment of ulcers, salol dissolved in vaseline affords an efficient antiseptic application, and apparently causes no irritation, but promotes rapid healing.

An efficient ointment for chapped hands which includes salol in its composition is mentioned under menthol.

Prof. C. Bozzolo recommends the hypodermic injection of from two to four syringefuls daily of the following solution in the treatment of rheumatic affections:

Salol . . . . .	1 gramme (15.4 grains)
Chloroform . . . . .	1 " (15.4 " )
Sterilised almond oil . . . . .	8 " (about 2 drachms)

*Salophen* (acetyl-para-amido-salol)—containing fifty-one per cent. of salicylic acid—has much increased in usefulness during the past year. It appears to have well established itself as the safe anti-rheumatic agent in all but chronic cases.

Dr. Augustin Huot, of Paris, France, has confirmed the usefulness of salophen in cases of acute articular rheumatism, in which it is preferable to salicylate of sodium, as it exercises no irritant action on the stomach or the kidneys. It appears to act as a gentle laxative on the bowels.

His conclusions are: 1. Salophen must be looked upon as a remarkable succedaneum of salicylate of soda. It possesses all of its beneficial properties against the articular manifestations of acute and subacute rheumatism.

2. While it has the same curative effects as sodium salicylate, salophen has none of its inconveniences. It is well tolerated by the organism: it does not irritate the stomach and causes no nervous disturbances.

3. In cases of chorea it has given such good results that it appears to be indicated in the treatment of that disease.

4. It acts very efficaciously in the various algias (cephalalgia, neuralgia, and notably sciatica and migraine).



5. Its mode of administration is simple. The dose varies according to the affections that are to be treated; but the average dose ranges from three to four grammes (46.3 to 61.7 grains) in twenty-four hours, in divided doses.

Dr. Harry S. Pearse, of Albany, N. Y., reports a very interesting series of fourteen cases of acute articular rheumatism, in which this agent is well supported in comparison with sodium salicylate. He concludes by saying:

"I do not mean to underestimate the value of the salicylate treatment; vast clinical researches have proved its great worth, but we are all compelled to recognise the dangers attending its careless use. If salophen will act as well in a prolonged and thorough trial as it has in my small series, and continue devoid of dangerous properties, it will eventually replace completely more dangerous methods of treatment.

"For the following table of the consumption of the four leading anti-rheumatics in Bellevue hospital since the advent of salophen, I am gratefully indebted to Dr. Charles Rice, chemist to the Department of Public Charities in New York.

	1892.	1893.	1894.	1895.
Acid, salicylic.....lbs.	93	157	12.5	170
Sodium salicylate.....lbs.	83	87	56	60
Salophen.....ozs.	8	175	None.	430
Oil of gaultheria.....lbs.	18	27½	16¾	22

"To use the doctor's words: 'These figures are remarkable. It seems as if in 1894 rheumatism had been quite rare. Or else some other treatment was used.'

"The broad sphere of usefulness of the acid in subacute cases, in the form of ointments and as an antiseptic, accounts for the large amount used.

"The field employment of salophen in Bellevue has been confined pretty closely to acute rheumatic cases, and the increase in the amount used seems to bear testimony to its growing favour."<sup>1</sup>

Dr. Luigi Cappellari, of Vicenza, Italy, reports favourably on 4 recent cases of sciatica in which apparently complete recovery was obtained by using doses of 3 to 5 grammes (46.3 to 77.2 grains) a day for five or six days.

Dr. Richard Drews, of Hamburg, Germany, reports favourably

<sup>1</sup>N. Y. Med. Jour., vol. lxiii, p. 345.

on its use in the treatment of the nervous form of influenza. In making his report he reviews the various forms of influenza since 1889, and the methods of treatment adopted in each case. After referring to the favourable reports by Claus and Hennig, he observes that in the more recent epidemics of influenza, nervous symptoms have been more prominent than in the first epidemic. These symptoms consist in headache, vertigo, prostration, and more or less sweating, together with pains in the back, neuralgias, etc. Antipyrin has proved serviceable in the respiratory and gastro-intestinal forms of the disease, but it has not been so useful in influenza with nervous symptoms. Dr. Drews says that in such cases he has used salophen with good results, and that its action is prompt, sure, and more rapid than the ordinary salicylates. The maximum daily dose given was 5 to 6 grammes (77.2 to 92.6 grains). In delicate subjects 500 to 750 milligrammes (7.7 to 11.5 grains), given at first every two or three hours, sufficed to arrest the neuralgic pains in two or three days. No unpleasant symptoms were ever observed.

*Salubrin*, the fancy name given to the patented mixture,

Acetic Anhydride	.	.	.	.	.	2 per cent.
Acetic Ether	.	.	.	.	.	25 "
Alcohol	.	.	.	.	.	50 "
Water	.	.	.	.	.	23 "
						<hr/>
						100 "

has not been heard of in the medical or pharmaceutical literature of the year.

*Salufer* is the trade name given by a manufacturer in Leeds, England, to potassium silico-fluoride. It is reported to be an efficient antiseptic and deodoriser, but the chief applications in which it has made its record are in chronic otorrhea, and as a uterine wash in puerperal fever. It readily dissolves in water, and a saturated solution may be made in boiling water. It is non-toxic, convenient, and cheap, but stains instruments. Often the best effects are to be obtained from the saturated solution.

Mr. F. Faulder White, F. R. C. S., of Coventry, England, reports having even freely dusted very foul wounds with the powder, rapidly washing it off. Recovery takes place without local inflammation or rise of temperature.

Nothing has been heard of it in this country as yet.

*Sanoform* (di-iodo-methyl salicylate) is the name given to the

latest substitute for iodoform, introduced by Dr. A. Arnheim, of Berlin, Prussia. It is obtained by the action of iodine on methyl salicylate (oil of wintergreen). It is a crystalline, colourless, odourless, and tasteless powder, permanent in the light and air, and melting at  $110^{\circ}$  C. ( $230^{\circ}$  F.), but may be heated up to  $200^{\circ}$  C. ( $392^{\circ}$  F.) without decomposing. It is soluble in 200 parts of cold or 10 parts of hot alcohol, and readily in ether, chloroform, benzol, and carbon disulphide, but very insoluble in water or glycerin. It contains 62.7 per cent. of iodine. The results of its use in surgery and gynaecology are extraordinarily good; healing ensues more quickly and more certainly than with iodoform, and signs of irritation are absent. Dr. Arnheim has published 72 cases, including 22 of soft sore, 20 of hard sore, 6 of bubo, 16 of phimosis, and 3 of surgical wounds, and finds that sanoform powder renders a secreting ulcer practically dry in two days, the secretion being soaked up by the powder, and forming with it an antiseptic covering, beneath which suppuration speedily ceases. It does not appear that the iodine in sanoform is set free by cell activity; on the contrary, it seems to be extremely closely combined. One gramme (15.4 grains) was injected under the skin of an animal in fine emulsion, but no potassium iodide could be detected in the urine, in which the presence of iodine could only be proved after evaporation and incineration. Sanoform is very slowly absorbed; it first appears in the urine about twenty-four hours after injection, and does not entirely disappear for about fourteen days, the maximum excretion being from the third to the sixth day. Sanoform can be used as powder, as a 10 per cent. ointment, or in a 1 per cent. solution in collodion. Schlesinger particularly recommends sanoform gauze (10 per cent.), which, owing to the high temperature at which it decomposes, can be easily sterilised—a great advantage over iodoform gauze. A further point in its favour is that it contains no colouring matter, and stains neither the tissues nor the bandages.

Nothing has been heard of it in this country as yet, but undoubtedly it will soon appear.

*Somatose* has markedly increased in prominence during the past year—in fact, it has steadily increased in favour ever since it was first extolled by Professor Hildebrandt at the Wiesbaden (Germany) Congress in 1893.

For the sake of ready reference, it may be of service to record here that it is a light, almost colourless powder, with about the following composition:

Albuminoids . . . . .	90.49 per cent.
Alkaline phosphates . . . . .	7.46 “
Peptone . . . . .	0.24 “
Moisture . . . . .	1.81 “
	<hr/>
	100.00 “

It is apparently free from the disagreeable bitter taste of most peptone preparations and has been found very useful in promoting the lacteal secretions in nursing mothers.

In artificial feeding, its condensed form and ready assimilation render it a very advantageous means of nutrition, especially in typhoid fever or disordered conditions of the stomach and intestines. From the results obtained in various hospitals in Germany, Belgium, and the United States, very favourable opinions of its value as a nutritive agent have been expressed by physicians. It is administered in doses of a teaspoonful three or four times a day, dissolved in warm milk or weak broth.

Somatose biscuits are now offered, containing 10 per cent. of this agent.

*Sozo-iodol* (di-iodo-para-phenyl-sulphonic acid) has been reported upon more frequently during the past year. It has been used in the form of the mercury, potassium, sodium, and zinc salts, and they are reported of service in the treatment of acute coryza, ozaena, rhinitis hypertrophica, chronic naso-pharyngeal catarrhs, acute and chronic laryngitis, syphilitic affections of the throat, in various diseases of the genito-urinary organs, and, in general, as an advantageous substitute for iodoform.

Dr. S. Schwarz, of Vienna, Austria, recommends the following formula as a prophylactic and curative to be insufflated every four hours into the nasal and pharyngeal cavities of children under two years old suffering from diphtheria:

Powd. sodium sozo-iodolate . . . . .	200 milligrammes (about 3 grains)
Flowers of sulphur . . . . .	400 “ ( “ 6 “ )
Saccharin . . . . .	65 “ ( “ 1 “ )

*Spermin* has been less heard of during the past year than the year previous, but it still has its advocates, principally in Germany, and reports continue to be made of its remarkable tonic influence.

The more thought is given to the subject of its supposed effects, the more irrational the explanations seem.

*Stypticin* is the more or less appropriate name chosen for co-



tarnine hydrochlorate, which has been successfully used to check uterine haemorrhage. It has been pointed out that curiously enough the most useless (in therapeutic value) of the principal alkaloids of opium—narcotine—should yield on oxidation an alkaloid called cotarnine which apparently has recently shown a far greater therapeutic activity than ever noticed before. This alkaloid is not new, but has simply been known and of interest as one of the many indirect products of opium. It is an amorphous sulphur-yellow powder with an exceedingly bitter taste, and readily soluble in water, making a straw-yellow solution which darkens in colour on exposure to light. It is closely allied in chemical composition to hydrastinin, and is reported scarcely inferior to it in its action, but possesses the great advantage of being considerably cheaper. Since the physiological chemists have been investigating it, much has developed which has led clinicians to make use of it. The most prominent observer making a report upon it is Dr. Sigmund Gottschalk, who gives his results in 47 cases of haemorrhage from the uterus. It can be given subcutaneously, or more conveniently in powder. The earliest experiences of its employment were not favourable, owing to too small a dose being given. Dr. Gottschalk finds that 50 milligrammes (4-5 grain) can be taken five or six times a day without any bad effects. It has a great advantage over hydrastis and other uterine haemostatics in that, as might be expected from its source, it possesses a well-marked and potent sedative action which is both local and general, and hence specially indicates its use in dysmenorrhic affections. It promptly checks haemorrhage resulting from pure uterine subinvolution, that is, that due to muscular atony and not to retention of membranes, etc. In cases arising from the latter cause ergot and hot douches together act better. In fungous endometritis it is a valuable adjuvant to the curette. It is very useful when the patient objects to curetting, and particularly in those cases in which this treatment does not stop the haemorrhage. It is also useful in haemorrhage caused by fibroids or the climacteric. In haemorrhage secondary to parametritis or disease of the appendages it is less effectual than hydrastis.

Dr. H. Gaertig made trials of it in various forms of uterine affections in which haemorrhage was a prominent feature. The most positive results were obtained in cases of uncomplicated menorrhagia and in the haemorrhage of the climacteric period. The least promising were those in endometritis, especially where complications were present, such as heart disease. It was useless

in intercurrent haemorrhage in pregnancy. Its use was held to be justified in this state, as it does not appear to induce uterine contraction. Where haemorrhage complicates retroflexion and sub-involution it was found to be very useful.

*Sulphonal* (di-ethyl-sulphon-di-methyl-methane) is still employed just about as much as last year. The abuse of it is still practised without much abatement, but it is hoped that physicians will continue to discourage its promiscuous use by the public. Little new has appeared about it in the medical and pharmaceutical literature. Attention has again been called to the annoying exanthematous rash too often produced by it. The most prominent note reported concerning it was the allusion made by Dr. Archibald E. Garrod and Mr. F. Gowland Hopkins, at a meeting of the London Pathological Society, on November 5, 1895,<sup>1</sup> to the occurrence in large quantities of haematoporphyrin in the urine of patients taking it. After pointing out that this product was present in traces in normal urine, and in larger amounts in many morbid conditions, they "proceeded to discuss its occurrence in much larger quantities still in the dark red urine of some patients who have, as a rule, taken sulphonal for some time. The evidence connecting this with sulphonal was discussed, and an epitome was given of the associated clinical symptoms and *post-mortem* appearances in the published cases. The patients are nearly always women who have taken the drug without ill effects for weeks, months, or even years previously. Abdominal pain and vomiting are prominent symptoms, and death in collapse frequently follows shortly upon the onset of the symptoms, which may only develop after the drug has been discontinued. Alkaline treatment appears to have been useful in some cases. Clinical histories of three cases (of women taking sulphonal), supplied by Drs. J. Delpratt Harris, W. M. Abbott Anderson, and M. J. Nolan, were then given. All the cases ended fatally, but no *post-mortem* examinations were made. In one instance sulphonal had been taken for four years, and in another the symptoms only commenced ten days after the drug was stopped. The authors then gave a detailed account of the general and spectroscopic characters of the dark red urines of these patients. Tube casts were present in each instance. Even the trace of iron found in normal urine could not be detected. Various methods were employed for the extraction of the haematoporphyrin, and it was found that the soda and ammonium chloride methods, which work so satisfactorily

<sup>1</sup> Brit. Med. Journ., vol. ii for 1895, p. 1164.

in ordinary cases, were quite unable to cope with the amount of the pigment present in these specimens. Repeated extraction with acetic ether was found very useful for the partial separation of the abnormal pigments present. In each instance the colour of the urine was only in part due to ordinary haematoporphyrin. In one case there was present much of a pigment derived from haematoporphyrin, which yielded two absorption bands like those of oxyhaemoglobin. In a second case another derivative of haematoporphyrin was found, and in all the dark tint of the urine was largely derived from a reddish-brown pigment, such as was observed by Hammarsten, which yielded no spectroscopic absorption bands. The views of Stokvis, as to the origin of urinary haematoporphyrin, were referred to."

*Tannalbin* is the name given to a compound of tannin and albumen brought together under special conditions. These two ingredients generally form what is known as tannin albuminate under usual conditions, but this latter apparently has the disadvantage of being soluble in the gastric secretions, thus not only irritating the stomach, but, being absorbed and combined in the stomach, it has little or no effect further along in the alimentary canal. Dr. R. Gottlieb, of Heidelberg, Germany, succeeded in obtaining a different state of this compound, which is not soluble in the gastric secretions, but is slowly soluble in the intestinal tract, by subjecting the so-called tannin albuminate to a temperature of 110° to 120° C. (230° to 248° F.) for five or six hours, thus securing a pale, yellowish-brown, tasteless powder, containing fifty per cent. of tannin. Not only is it soluble in the intestinal secretions, but a splitting up takes place which enables the resulting tannic acid to act as an effective astringent throughout that part of the alimentary canal.

Dr. R. von Engel, of Brünn, Austria, reports upon forty cases of diarrhoea of varying origin treated with this agent in the Moravian Hospital of his city. In all cases, except a few in which there were profound lesions of the digestive tract, such as lardaceous degeneration, the internal administration of tannalbin was followed by subsidence of the watery discharge, both in acute diarrhoea and in chronic diarrhoea of tubercular or other origin, in adults as well as in children.

The effective dose was 1 gramme (15.4 grains) for adults, and 500 milligrammes (7.7 grains) for children under four years of age. This dose had to be repeated three or four times a day. The frequency of administration is at intervals of two hours, or even an

hour in severe cases, suspending the treatment, after three or four doses have been taken, until the next day.

It never produced the least gastric disturbance, even in cases in which it was continued for several weeks.

“Dr. O. Vierordt has used tannalbin in some thirty selected cases, mostly of subacute or chronic intestinal catarrh, including ulcerative enteritis, occurring usually in young subjects. Regulation of the diet, other drugs as well as other methods of treatment, such as injections, etc., had produced no good effect. The astringent action of the drug was well marked in the various forms of diarrhoea, even including cases of suspected tuberculous ulceration of the bowel. In the various forms of enteritis the stools became more solid and the mucus present diminished, so that the dose of the tannalbin could soon be lessened and the drug discontinued. In four cases in which cod-liver oil containing either creasote or phosphorus produced diarrhoea, the stools became solid and less frequent when tannalbin was given in addition. No unpleasant symptoms were produced by the tannalbin. The author discusses the possibility of a favourable action being exerted on internal organs, such as the kidneys, etc., when large quantities of tannin can thus be introduced in the body without inconvenience. In five cases of chronic renal disease tannalbin produced good effects in three. The drug does not produce constipation in the healthy alimentary canal. The author looks upon tannalbin as being the best tannic acid preparation yet introduced. As to dose, 0.5 to 1 g. may be given four times a day, and if a favourable action is not soon noted it should rapidly be increased, the upper limit being 2 g. as a single dose, and 10 g. in the day. The drug is tasteless, and can be given between or after meals in water, milk, etc.”<sup>1</sup>

This strictly intestinal astringent has not been heard of in this country as yet.

*Tannigen* (acetyl tannin)—the odourless and tasteless form of tannin, insoluble in water and acids but readily soluble in alkaline solutions—still continues to receive prominent attention. Its use is pretty generally confined now to the treatment of infantile diarrhoeas, and there does not appear to be any adverse criticism so far. The principal users have been foreign practitioners. It is being used, however, in this country to an increasing extent, and some reports have been made by the laryngologists as being of service in hypertrophic rhinitis and chronic nasal pharyngitis, but otherwise little has been reported as yet.

<sup>1</sup>Epitome Brit. Med. Journ., vol. ii, for 1896, page 8.



*Tannoform* is the name given to a condensation product of nut-gall tannin (gallo-tannic acid) and formic aldehyde (formaldehyde). It is prepared as follows: 5 kilogrammes (1 kilogramme = 2 lbs. 3½ ozs.) of tannin are dissolved in 15 kilogrammes of hot water with 3 kilogrammes of a 30 per cent. solution of formaldehyde. To this concentrated hydrochloric acid is added as long as a precipitate is obtained (on an average from 12 to 15 kilogrammes of the acid). The precipitate is then washed in water and dried at a temperature of 102° to 105° C. (215.6° to 221° F.) It is a light, yellowish-gray powder, without smell or taste, insoluble in water, and in the organic solvents, with the exception of alcohol. It is soluble in dilute alkaline solutions, from which it is precipitated by the addition of acid. When heated it melts in decomposing at 230° C. (446° F.)

Among the advantages claimed for it, as compared with tannin, are its tastelessness; the fact that even in large doses it does not cause the slightest irritation of the buccal mucous membrane; that it is not dissolved in the stomach, and reaches the intestine without undergoing any change; and that even in large doses it does not irritate the mucous membrane of the stomach. On the other hand, formaldehyde alone is a strong protoplasmic poison. This combination with tannin, however, is said to leave its antiseptic, drying, and hardening properties intact, while making it harmless to the tissues.

Drs. G. de Buck and L. de Moor, of Belgium, as well as Prof. J. von Mering, have made a careful experimental and clinical study of this new agent. They used either the powder alone or with talc or starch. They also employed an ointment with vaseline and lanolin, in the various skin affections in children. In erythema, intertrigo, hyperidrosis of the palms and soles, bromidrosis, impetigo, eczema, vaccinal ulcerations in adults and in the dressing of operation wounds, old infectious sores, indolent ulcers of the legs, bed-sores, ulcerated lupus, diabetic gangrene, and after extra-peritoneal myomotomy it proved of marked service, the antiseptic and drying effects being very marked, and no irritation of the skin. As an intestinal astringent and antiseptic in infantile diarrhoea satisfactory results were obtained.

Similar compounds obtained from other kinds of tannin are distinguished as oak bark tannoform, quebracho tannoform, rhatany tannoform, and so on, according to the plant from which the tannin is obtained.

*Tetronal*—closely allied to sulphonal and trional—is still being

employed, but no one has been sufficiently impressed with its action to speak for or against it.

*Thioform* (so-called bismuth di-thio-salicylate)—a combination of bismuth, sulphur, and salicylic acid—offered as a substitute for iodoform, has received little attention during the past year. Dr. G. de Buck appears to be the only observer who thought of reporting upon it. He extols it for dermatological uses, as a valuable topical antiseptic and dessicator. It apparently forms a serviceable protective layer. All raw, weeping, or ulcerated surfaces heal rapidly under it, whether in the form of the powder alone, or mixed with equal parts of powdered boric acid. It is indicated in all ulcerative skin affections, and where epidermic softening exists. Internally its constipating and disinfectant qualities were manifested in three cases of acute enteritis. In a chronic case it caused gastric irritation and did not influence the muco-sanguinolent stools. The dose of 2 grammes (30.9 grains) for an adult, 500 milligrammes to 1 gramme (7.7 to 15.4 grains) for a child in powder or mucilage, was perfectly well borne by the stomach.

*Thiol*—synthetic ichthyol—has been little reported upon during the past year. Although it is admitted that it has the advantages of not staining the skin, linen, or instruments, and that its odour is not disagreeable, still it has not proved as useful as was promised.

*Thiosinamin* (allyl-sulpho-carbamide) continues to be employed in the treatment of lupus. Dr. H. von Hebra, Jr., of Vienna, Austria, and other foreign observers, have obtained results which incline them to at least continue to experiment with it. In this country the most prominent report of the year was made by Dr. Sinclair Tousey, of New York, on its use in the "Treatment for 'Inoperable' Tumours, Cicatricial Contractures, and Keloid."<sup>1</sup>

He states:

"I have been experimenting with thiosinamine and studying the literature in regard to it for over a year and a half, and I think I have proved that it possesses positive curative properties in causing the resolution of benign and malignant tumors, and the absorption of cicatricial tissue.

"So far as reported cases go, mine are the first in which it has been employed in the treatment of keloid and other neoplasms; and though the number of my cases has been small, the results have been positive. I believe that with increasing opportunity even greater action will be demonstrated than is now apparent."

<sup>1</sup> N. Y. Med. Journ., vol. lxiii, p. 579.

He closes as follows:

"There are reserved for another paper the description of additional cases, and the consideration of the selection of cases for this treatment in preference to local means.

"To recapitulate: We have in thiosinamine a drug producing, when given hypodermically, no general symptoms, and even when long continued no harmful effects. It acts specifically upon certain abnormal tissues, to cause their absorption or conversion into normal tissues. It is of doubtful efficacy in lupus and a variety of skin diseases. But it is of the greatest possible value in the removal of cicatricial contractures following lupus or any other cause of loss of substance. The frightful contractures from burns of the neck would yield to its action, as cases of ectropion and corneal opacity do. My own cases have shown its curative effect upon keloid, and its palliative and probably curative effect on malignant tumors."

*Thyroid extract* has received considerable attention during the past year, and the literature on it is voluminous. Little has been added, however, to what was known a year ago, but possibly somewhat less of excessive enthusiasm is noted. This is, on general principles, a good sign, for much more reliable results are sure to be produced and reported on when extravagant statements are not resorted to. Surely most practitioners in the United States are more or less familiar with what has been accomplished in this country, so that it may be profitable only to allude here to a summary of what has been reported abroad. After reading over the reports from all the prominent centres, the conclusions for the whole may be well summed up in those of Dr. R. Lépine, professor of clinical medicine at the Medical Faculty of Lyons, France, who made a report on "The Thyroid Treatment"<sup>1</sup> as follows:

"In experimenting with the thyroid treatment, I should recommend the use of the fresh gland, which is easily administered, after having been crushed in cachets. In some cases, however, the extract may possibly be resorted to for injection, not subcutaneously, but into the ampulla of the rectum, by means of a suitable syringe.

"The conclusions at which I have arrived on the subject of thyroid treatment are as follows:

"(1) It is indicated in operative and spontaneous myxoedema, and

"(2) In certain cases of obesity.

<sup>1</sup> The Medical Week, vol. iv, p. 169.

"(3) It appears also to be indicated in non-cystic goitres and in some cases of mental disease, though in these the result is likely to be incomplete.

"(4) Exceptionally it is advantageous in special cases of exophthalmic goitre, but in this disease extreme caution is necessary in using the treatment.

"(5) It has also proved successful in some cases of chronic affections of the skin, more particularly in psoriasis.

"(6) In any event recurrences are frequent."

There seems but little doubt that the fresh gland is most desirable, and Mons. Vigier took pains to explain recently before the Therapeutical Society, of Paris, France, the process of preparation. It consists in reducing the fresh gland to a pulp, adding in succession powdered sugar, borax, and charcoal (the latter to prevent decomposition), and thoroughly mixing the whole. It seems hardly necessary to call attention to the fact that only healthy and fresh glands should be used, and that the above manipulation should be accomplished rapidly.

*Thyro-Iodin* is the name given to the compound which has recently been isolated by Prof. G. Baumann, of Freiburg, Germany, from the thyroid gland of the sheep. It is extracted by prolonged boiling of the gland with ten per cent. sulphuric acid, from which it is taken up with alcohol and purified. It is described as an amorphous brown powder, practically insoluble in water but readily soluble in alcohol, containing 9.3 per cent. of iodine and 0.5 per cent. of phosphorus—elements accumulating there from the food and water consumed by the animal.

Its action is similar to the regular thyroid extract and the fresh gland itself but, by experiment, it was found to be inert when the iodine was removed from it. It has been tried clinically only to a limited extent as yet.

*Toluol* (methyl-benzene) has not been reported upon during the year in relation to its use in medicine. It continues to be, however, an article of increasing importance chemically as a commercial article with considerable demand.

*Trikresol*—the antiseptic mixture of 35 per cent. ortho-cresol, 40 per cent. meta-cresol, and 25 per cent. para-cresol—has received practically no attention in the medical and pharmaceutical literature of the past year.

*Trional* (di-ethyl-sulphon-methyl-ethyl-methane)—closely allied to sulphonal—has not received the attention during the past year that it did the year previous. However, it has been well received,



for it combines advantages which are not found in the other hypnotics. It is still classed by many as one of the best and relatively safest of all the true hypnotics—prompt in action and the best borne. Dr. Richard Drews, of Hamburg, Germany, goes so far as to class it as “an ideal hypnotic.” Unfortunately it has its drawbacks. Toxic cases are still reported and extreme care is urged, especially when prolonged administration is called for, which should be either interrupted by intervals of several days during which time no hypnotic is given or alternated with some of the other hypnotics, according to circumstances. As it apparently loses its effect in a day or so, the dose is generally increased when a prolonged use is called for. Then it is that its cumulative toxic effects are made prominent.

*Triphenin* is the name given to one of the newer antipyretics, analogous to phenacetin. It is obtained by heating para-phenetidin with propionic acid. This latter acid is obtained either by the splitting up of glycerin by contact with water and yeast at about 25° C. (77° F.), or again by heating to a high degree the acid of santonin—santonie acid. Triphenin is much less soluble in water than phenacetin—requiring about 2,000 parts. No description is given of its other physical properties.

Dr. J. von Mering appears to be the only prominent advocate of its use so far. He speaks very enthusiastically of it, and claims that its action is that of an antineuralgic and analgesic, as well as antipyretic—acting promptly and mildly. To allay fever, he recommends a dose of 500 to 600 milligrammes (7.7 to 9 grains), which will reduce the temperature 2° to 3° C. To obtain an analgesic effect in neuralgias, the dose has to be increased to 1 gramme (15.4 grains). Nothing has been heard of this agent in this country as yet.

*Tuberculin* (parataloid) has now pretty definitely settled down into its legitimate sphere of usefulness—that of a diagnostic agent, particularly in cattle. Official commission and boards of health generally are now so firmly convinced of its efficiency in this line that they are promulgating rules and directions to be followed in making effectual use of this valuable agent.

*Tussol* is the name given to antipyrin mandelate—containing about fifty-five per cent. of antipyrin. Mandelic acid is the acid of amygdalin (the characteristic constituent of bitter almonds). Tussol is not an agent of much prominence, although several German observers have reported favourably upon its use in pertussis epidemics. Little is heard of it in this country.

*Uranium nitrate* continues to prove of value in selected cases of diabetes mellitus, and therefore it may be of interest and value to quote here from a "Further Contribution on the Treatment of Diabetes Mellitus by Uranium Nitrate," by Dr. Samuel West, F. R. C. P., of St. Bartholomew's Hospital, London, England.<sup>1</sup> He says:

"Further experience during the last twelve months has confirmed the general results which I stated in my paper read before the British Medical Association last year. The effects of the drug are: (1) to diminish the thirst; (2) to reduce the amount of urine passed; (3) to reduce the percentage of sugar. Like all the other drugs used in treatment of diabetes, uranium nitrate does not influence all cases equally favourably.

"The clinical investigation of the action of drugs in diabetes mellitus is not by any means an easy one. It involves time and care to eliminate the many disturbing factors in the results. In hospital cases, I have taken the patients into the ward, and kept them for some time upon diabetic diet, until the benefits derived from dieting, rest, freedom from care and fatigue, had fully shown themselves. As soon as the patient appeared to have arrived at a condition of equilibrium, the drug was administered, in small doses at first, which were afterwards gradually increased. In private practice, the results are not so conclusive, and the difficulties to be surmounted are often considerable.

"Before mentioning the new cases, I will continue the history of Mrs. W., one of the cases I recorded last year, in which the drug reduced the sugar for some months almost to the vanishing point. While taking the drug, she was attacked with severe influenza, which made her very ill, and during which time the drug was suspended. She went away for a holiday on recovering, and has not since resumed the drug. For a long time, the percentage of sugar and the amount of urine were very much increased, probably as a consequence of the influenza. Gradually, as her health improved, the condition of the urine became very much the same as at the time when she first came under my observation, and when I saw her last, a few weeks ago, she was passing three per cent. of sugar. She did not wish to resume the taking of the drug, chiefly because she found it did not actually cure the disease, and because, feeling fairly well, she did not attach much importance to the larger percentage of sugar. There was another objection which she felt, namely, that about every four weeks or so she had an

<sup>1</sup> Brit. Med. Journ., vol. II for 1896, p. 729.

attack of dyspepsia, with a little looseness of the bowels. This she attributed to the drug, though I do not feel sure that she was right, for it occurred about the catamenial period. Still, this disturbance might have been due to the drug, and certainly the symptoms passed off when the drug had been suspended for a time. I think it might be well, in administering the drug to sensitive patients over a long period of time, to intermit it every three or four weeks for a few days, giving the stomach a rest, and after that time to resume it as before. As the action of the drug is slow to commence, and also slow to pass off, this may be done without interfering with its effect. With reference to the new cases which I am about to record, I have not this year any such striking cases to publish as I had last year; still, there are several in which the same general improvement was produced, though not to the same degree."

He then gives the clinical history of five new cases, after which he closes as follows: "In conclusion, I would say that the continued observation confirms the opinion I expressed last year, that we have in uranium nitrate a drug of considerable value in diabetes mellitus, though, like all the others, it cannot be relied upon to produce equally good results in all cases indiscriminately."

Those who may be interested in this treatment will find the report of an instructive case under the care of Dr. J. B. Bradbury, F. R. C. P., in Addenbrooke's Hospital, Cambridge, England, reported in the *British Medical Journal*, vol. ii for 1896, p. 847.

*Urotropin* is the name given to the compound formed by the union of formalin and ammonia, and known chemically as hexamethylene-tetramin.

Dr. Arthur Nicolaier, of Göttingen, Prussia, found it of value as a diuretic, as a solvent of uric acid and urates, and well adapted as a solvent of uric acid calculi up to a certain point.

It is apparently non-toxic, and not irritating in its effects, for Dr. Nicolaier used it in doses up to 5.8 grammes (90 grains) without disagreeable results. He generally administered one dose in the morning of about 1 to 1.5 grammes (15 to 22 grains) dissolved in a little water. The few reports from observers in this country are apparently favourable, but a more extended experience is required before a more definite opinion can be given.

*Weights and Measures* by the decimal (metric) system, has received still more prominent attention during the past year. Its advance has met with a few set-backs, but they are only temporary, and the more prominent on account of the apparently rapid for-

ward steps which had been previously made. On account of the unreasonable criticism, and false statements, repeated so many times during the past year, including the statement that the United States was as far behind as Great Britain, it may be well to restate here, most emphatically, that this system was surely adopted permissively by an act of congress, passed as long ago as 1866, which will be found on page 704 of the Revised Statutes. Its use has, therefore, been authorised and permitted by law for the past thirty years, so that all have had the privilege of buying and selling by this system. The recent attempt in congress to further the cause, was simply to obtain some fixed date in the future when its use would be compulsory. This may be an unwise step, as it may be best to allow such a revolutionary change to work itself into accomplishment, but it does seem reasonable to at least seek for its compulsory use in all departments of the government. Then will all home merchants, as well as all nations, be brought face to face with it in practical use, and, from the experience of Germany, which made the complete change, without friction or trouble, in two years, the advantages will be self-evident, and quite convincing.

In Russia and Great Britain—the only other prominent countries now outside the ranks of the progressive and advanced nations of the world—the subject is receiving marked attention still, and gaining ground in each. In Russia, the matter has been about practically settled, for a certain limited time has simply to elapse before its full accomplishment will surely come, as the preliminary edicts have been announced. In Great Britain, the cause moves along more slowly, largely due to the English inherent conservative character. The government has it in charge now, and will no doubt soon, at least, legalise its use as in this country, which will be the entering wedge.

Those who are interested and desire to post themselves on the recent arguments in its behalf, as well as some convincing answers to the critics, are recommended to read an article entitled, "The Metric System," by Prof. T. C. Mendenhall, in *Appleton's Popular Science Monthly*, vol. xlix, p. 721.



## MEMOIR OF WILLIAM O'MEAGHER, M. D.

By JOHN SHRADY, M. D., of New York County.

Dr. William O'Meagher was born January 18, 1829, in Killenaule, County Tipperary, Ireland, and came of an ancient family, whose coat of arms bore for its motto "Fortis et Audax." He was the only son of William O'Meagher (1780-1843) and Joanna Hamen (1788-1870). His education began in private schools and was continued in Queens College, Galway, until he passed his examination in arts at the age of twenty years. He then entered as a medical student at Queens College, Cork, at which institution, owing to his superior classical attainments, he had won a scholarship. Possessed of a license from Apothecaries Hall, Dublin, he was recorded in 1851 as an apprentice of Dr. William Fennelly, of his native county, and so continued until November 24, 1852, when he was engaged as surgeon of the ship *Iowa*.

Having arrived in America he superintended the drug store of Dr. John O'Rielly, and enjoyed the many opportunities afforded by the latter's exceedingly large practice. Subsequent to this, O'Meagher attended lectures in the N. Y. University Medical College, and was graduated therefrom, a member of the class of 1857.

He then joined his brother-in-law, Dr. James L. Kiernan, as co-editor of *The New York Medical Press*, the first medical weekly published in the United States. After the publication of three volumes (4to, 1859 to 1861) this enterprise, though in a measure successful, was abandoned by reason of extrinsic causes rather than through lack of scientific or literary appreciation. It is fair to state, however, that his duties as one of the resident staff of St. Vincent's Hospital may have interfered with his ambition in this respect, for he was a man of high ideals. Added to all these, his name is also credited in 1861 with being one of the physicians of the New York Dispensary. At the time of the last war he was mustered in as surgeon of the Thirty-seventh regiment of the New York Volunteer Infantry in 1863, and from 1864 to 1865 he served as surgeon of the Sixty-ninth Regiment of New York Volunteer Infantry—a distinction which he highly prized. Other honours followed rapidly, such as the position of pension-examining sur-

geon from 1865 to 1869, and sanitary inspector for the Metropolitan Board of Health for the Richmond county or Staten Island district, he at that time being a resident thereof, although on account of impaired health he was compelled to remove to New York city, where he ever afterward remained.

Of his war record, his friend, Dr. John Dwyer of New York city, writes thus :

“ O’Meagher was actively engaged during the war, and was twice a prisoner, captured with the wounded on the field at Centreville, September, 1862. After his release he was sent on special duty to Fort Schuyler, New York, and in December, 1863, he joined as surgeon of the Sixty-ninth Volunteers of the famous New York Irish Brigade (Thomas F. Meagher’s) in which he served manfully to the close of the war.

“ On May 5, 1864, he was left in charge of the wounded after the Battle of the Wilderness—was taken prisoner but soon paroled—he again joined his regiment, and as surgeon-in-chief of his brigade, performed his last military operation on the field of Appomattox in April, 1865.”

Dr. O’Meagher was noted for his many charitable and self-sacrificing acts, both towards the poor and his army friends. He was industrious, somewhat self-depreciating, but always commanding respect for his honesty, which was a leading trait in his character. Devoted to the honour of his profession, he exerted himself to favour its best interests, and was ever ready to aid with his advice the young or struggling practitioner.

He was a fellow of the New York State and County Medical Associations—a member of the Celtic Medical society, and treasurer of the Gaelic Society, and surgeon to Shields Post, G. A. R., No. 69. In 1894 he was elected coroner of New York city on the crest of the reform wave, leading the ticket by a thousand, thus proving his popularity with all classes. On February 24, 1896, while still in office, he succumbed to pneumonia.

He was a widower, and left one child, Mrs. Eveleen O’Donoghue.

## MEMOIR OF DR. RICHARD VAN WYCK.

By IRVING D. LEROY, M. D., of Dutchess County.

Dr. Richard C. Van Wyck died at his home at Hopewell, New York, January 28, 1896. His death was sudden and tragic. When near his home on Saturday night, the twenty-fifth, his horse took fright at the railroad crossing and ran away, throwing him violently upon the ground while turning into his own yard. He became unconscious and died in a few hours.

Dr. Van Wyck was born in the town of East Fishkill, Dutchess county, New York, December 30, 1843. He was the son of Cornelius R. Van Wyck, and grandson of Col. Richard C. Van Wyck. His mother was Phœbe C. Wortman, daughter of Denis Wortman, M. D. For many years he had covered in his practice almost the identical field traversed by his grandfather for nearly fifty years.

Dr. Van Wyck's ancestors, both paternal and maternal, emigrated from Holland. He was a lineal descendant of Cornelius Barense Van Wyck, his first paternal ancestor in America, who emigrated to this country in 1659, and settled in New Amsterdam. On his maternal side he was a descendant of Disck Jansen Wortman, who emigrated from Holland in 1646, and settled in Brooklyn.

Dr. Van Wyck's preliminary education was obtained in the public schools at Poughkeepsie, New York, and at New Haven, Connecticut. He then took special courses in the Scientific and Medical departments of Yale University. Next he matriculated at the College of Physicians and Surgeons in New York city, became a pupil of Drs. Willard Parker and Edward Janeway, and was graduated March 12, 1867; after which he received an appointment on the resident medical staff of Bellevue hospital, completing his term of service April 1, 1869. He then went to Europe and directly to Berlin, where he followed the clinics of Sangerbeck, Virchow, and others. Next he visited Prague, Vienna, Edinburgh, and London, taking special courses at each place. While at the Royal College of Surgeons in London, he had an attack of hæmorrhage of the lungs, gave up farther study, and returned to this country, arriving in March, 1871.

He traveled quite extensively through the western and southern

states, during which time he practised at Denver, Colorado, and in Virginia, and finally settled at Hopewell, New York, where he remained until his death.

He was a member of the Dutchess County Medical Society, and an original fellow of the New York State Medical Association, attending its meetings frequently, and always taking a lively interest in its welfare.

In his intercourse with the profession, Dr. Van Wyck was always frank and courteous, and many members of it who have come in contact with him in consultation, will testify to the honourable treatment received from him.

On June 19, 1889, Dr. Van Wyck married Miss Charlotte, only daughter of Anthony Underhill, M. D., of New Hackensack, New York, who, with a mother, five sisters, and one brother, survives him.

His funeral, which took place from the Reformed church at Hopewell, New York, of which he was an elder, was largely attended by members of the medical profession and representative citizens.

One of his conspicuous characteristics was his sympathy and tenderness in the sick-room, personally administering to the wants of his patients.

There are few physicians who possess more completely the confidence of their patients than he did, and few will be more widely missed or so sincerely mourned. Deeply must all regret that one so capable by culture and long experience of doing good to his fellow-men, should be taken away in the full development and fruitage of a successful career. We can only explain such mysteries by a reference to that Higher Power, who controls every incident of the universe.



## MEMOIR OF GEORGE WIEBER, M. D.

By N. W. LEIGHTON, M. D., of Kings County.

Dr. George Wieber was born April 15, 1825, at Weitzler, Germany. His father was a Lutheran clergyman who realised the value of a liberal education and gave his son the advantage of his experience. Dr. Wieber pursued his study of medicine in Halle, Marburg, and Giesson; and in 1848 entered the German army as surgeon, continuing his service during the short war with Denmark. After leaving the army, he served as surgeon on an American clipper for several years. In 1857 he commenced private practice in the thirteenth ward of Brooklyn, which was the city of Williamsburgh prior to its annexation in 1854.

He gained the respect and fellowship of the medical profession in those early days. At the outbreak of the Rebellion, he entered the service as surgeon of the German Battery, afterwards a part of the First New York Artillery.

While Surgeon Wieber was stationed with his battery at Whitehouse Landing (on the Pamunky river), Va., in May, 1862, the writer had occasion to accept of his hospitality; for after superintending the transportation of the sick and wounded from the front to the Landing one stormy day and night, he was wet, weary, and hungry, and Surgeon Wieber sheltered, warmed, and fed him. It was but one of many offices of kindness he delighted to perform.

Dr. Wieber served in other positions as medical officer to the army, after the reorganisation of the artillery, till he returned to private practice in Brooklyn. Although an able practitioner in good standing for so many years, Dr. Wieber was not legally qualified under the existing laws of New York state. He therefore submitted to an examination by the Board of Censors, in 1875, and was granted a license by the Kings County Medical Society. He continued the practice of medicine in the thirteenth ward till prevented by sickness,—his practice being more laborious and humane than lucrative. In 1890 he received an unusual injury by a fall, rupturing the rectus femoris muscle of the right thigh, which crippled him for several months.

Dr. Wieber was a Republican and a public-spirited citizen. He

was a member of Dakin Post, G. A. R. He served as sanitary inspector to the Brooklyn Board of Health for five years. He was formerly a member of Kings County Medical Society and of the Anatomical and Surgical Society. At the time of his death he was a member of the New York German Medical Society, an original fellow of the New York State Medical Association, an original fellow of the Kings County Medical Association, and one of its executive committee from 1887 to 1892. Dr. Wieber's first wife did not survive long after the birth of her only child, which also soon died.

His second wife, to whom he was married on February 10, 1863, was the widow of the late Dr. Haller. Two children, twin boys, died of diphtheria and scarlatina in February, 1873.

Dr. Wieber was taken sick on December 15, 1895, with an obscure intestinal trouble which proved to be carcinoma of the mesentery, and died at his home, 181 South 5th street, on January 31, 1896, haemorrhage of bowels supervening. A year or more before his death, he delivered sealed instructions to his wife regarding the disposition of his remains, which were as follows, namely,—

“Dakin Post is to be notified at once to take charge of the funeral. The services are to be held in my residence, and to consist simply of the Grand Army ritual. I direct that my remains be taken to the crematory, and there incinerated, the ashes then to be interred in the graves of my two children, buried in Evergreen cemetery.”

His instructions were complied with. His widow and daughter, Mrs. Schoonmaker, survive him, also his son Adolph, who graduated in medicine at Giesson, Germany, in 1889, and at Long Island College Hospital in 1890.

The many friends and patrons of Dr. Wieber miss him and mourn their loss. The medical profession of Brooklyn has lost a zealous supporter of the principles which pertain to the highest type of its science, art, and ethics. The Kings County Medical Association assures the family of its sympathy, and that it will retain pleasant recollections of its deceased fellow.

## REPORTS OF THE DISTRICT BRANCHES.

### FIRST DISTRICT BRANCH.

The twelfth annual meeting of the First District Branch of the New York State Medical Association was held in the Metropolitan Hotel, Little Falls, May 19, 1896,—Dr. C. H. Glidden, V. P., in the chair.

The members present were Dr. Robb, Amsterdam; Dr. Ayres, Fort Plain; Dr. Symonds, Canajoharie; Dr. Cooley, Oswego; and Drs. E. H. Douglas, Glidden, Garlock, Sharer, and Ellis, of Little Falls. There were also present a number of visiting gentlemen from Little Falls and vicinity, who participated in the discussions.

Dr. E. H. Douglas, of Little Falls, was elected secretary to fill vacancy.

Dr. W. D. Garlock read a paper with the title, "Treatment of Weak Heart." It was discussed by Drs. Sharer, Robb, Cooley, and Ayres.

Dr. E. H. Douglas of Little Falls read a paper with the title, "The Recent Epidemic of Measles in Little Falls Presenting Some Peculiar Features." The paper was discussed by Drs. Cooley, Ayres, Robb, Glidden, Garlock, and several of the visiting members.

Dr. Ayres of Fort Plain read a paper with the title, "Remarks on Empyema with Report of a Recent Case." Discussion by Drs. Garlock, Robb, and Sharer.

Dr. Robb, of Amsterdam, read a paper upon the "Diagnosis of Posterior Sclerosis," and presented a case.

Letters and telegrams of regret were read from Drs. E. D. Ferguson, A. Walter Suiter, and several others.

A large amount of discussion was participated in by all present upon interesting medical topics.

Adjourned at 5 p. m.

E. H. DOUGLAS, M. D., *Secretary.*

## SECOND DISTRICT BRANCH.

The twelfth annual meeting of the Second District Branch of the New York State Medical Association was held in Schenectady, June 25, 1896, at the Hotel Vendome.

Thirty-three members registered. The president, Dr. Thomas Wilson, not being present, Dr. H. C. Van Zandt presided.

On motion of Dr. E. D. Ferguson, an assessment of fifty cents was made to defray expenses of the Association.

An interesting paper on "The X-rays, and their Assistance to the Surgeon," was read by Dr. William Finder, of Troy, with stereopticon illustrations by Dr. A. T. Van Vranken, of Watervliet.

A paper on "The Art of Prescribing" was read by Dr. S. F. Rogers, of Troy.

An interesting talk, on "A Class of Fatal Cases Presumably Due to Intestinal Ptomaines," was given by Dr. E. D. Ferguson, of Troy. Remarks were made by Drs. Van Vranken, Finder, and Rogers.

Adjournment was taken at one o'clock for dinner. Judging from the appetites of several of the members, the dinner was satisfactory.

The afternoon session was called to order at three o'clock. On motion of Dr. Ferguson, the old officers were elected for another year.

Dr. H. C. Moriarta, of Saratoga, read three well-prepared papers: (1) "Dislocated Cervical Vertebrae;" (2) "Suprapubic Cystotomy;" (3) "Appendicitis."

The "History of a Case of Progressive Spinal Muscular Atrophy, with Amyotrophic Lateral Sclerosis and Progressive Bulbar Paralysis," by Dr. J. P. Marsh, of Troy, was very interesting, as such cases are rare.

A vote of thanks was extended to the Schenectady members for the royal manner in which the Association was entertained.

The Association adjourned, to meet in Saratoga, on the last Thursday in June, 1897.

After adjournment, the Committee of Arrangements took the members on a tour through the Edison General Electric plant, and it was thoroughly enjoyed by all.

JOSEPH E. BAYNES, *Secretary*.



### THIRD DISTRICT BRANCH.

The twelfth annual meeting was held in Auburn, June 11, 1896.

List of Fellows present:

Dr. Frank G. Seaman, Seneca Falls, *President*.  
Dr. William R. Laird, Auburn, *Secretary*.  
Dr. John G. Orton, Binghamton.  
Dr. H. C. Hendrick, McGrawville.  
Dr. W. L. Ayer, Owego.  
Dr. George W. Miles, Oneida.  
Dr. C. D. Bradford, Homer.  
Dr. Frank D. Reese, Cortland.  
Dr. Chauncey P. Biggs, Ithaca.  
Dr. Homer O. Jewett, Cortland.  
Dr. Ely Van de Warker, Syracuse.  
Dr. E. D. Ferguson, Troy.  
Dr. Leroy J. Brooks, Norwich.  
Dr. Elias Lester, Seneca Falls.  
Dr. A. J. Dallas, Syracuse.  
Dr. F. O. Donohue, Syracuse.  
Dr. A. J. Parsons, Marcellus.  
Dr. F. W. Higgins, Cortland.

Visitors present:

Dr. C. O. Baker, Auburn.  
Dr. Leroy Lewis, Auburn.  
Dr. George W. Greene, Auburn.  
Dr. Frank Putnam, Auburn.  
Dr. S. E. Austin, Auburn.  
Dr. Frederick Sefton, Auburn.  
Dr. Thomas Conant Sawyer, Auburn.  
Dr. Frank Kenyon, Scipio.

The president's address was read on "Prescription Writing," giving, as his opinion, that most patients abused the privilege of knowing the medicines they were taking, rather than being benefited thereby.

Dr. E. D. Ferguson gave an interesting talk on the subject of "Intestinal Ptomaines." He reported eight cases, ranging in age from eight to sixty years of age. Nearly every case resulted fatally. Post-mortem examinations, in these cases, showed the liver to be dark in colour, soft, and flabby. A dark, very odorous fluid was always found in the stomach. Always constipation, with black vomit. This might be called a parenchymatous hepatic

tis, with hyperaemia of the stomach and bowels. Treatment, stomach pump, and large enemas, washing out the whole alimentary canal. Dr. Sefton said that he had had some experience in hospitals, due to patients eating poisoned hash; most of them recovered. Further discussed by Drs. Lester and Van de Warker.

Dr. Dallas gave a very amusing report of his experience as a country, then as a city, practitioner, for over one half a century,—from 1844.

Dr. George H. Miles next gave his view of the “Business End of It,” meaning, while we are trying to keep good the health of the public, we should not forget our own financial interests. Discussed by Drs. Lester and Ferguson.

Dr. F. O. Donohue, of the New York State Tuberculosis Commission, read a paper on “Tuberculosis in Milk.”

In the discussion of the paper, Dr. Brooks gave his experience in examining the milk cans, as they returned on the railroad to be refilled. In some cases, they contained all kinds of excrement, dirty rags, and other kinds of filth, too numerous to mention. Drs. Higgins, Jewett, and Parsons also made valuable remarks. Dr. Donohue said he considered tuberculin a sure test for tuberculosis in cows. Dr. Lester moved a vote of thanks to Dr. Donohue for his valuable paper.

Dr. Chauncey P. Biggs reported a case of abdominal injury and cut, about three and one-half inches long, one inch above and to the right of the umbilicus, through which eight feet of bowel had protruded. Patient made a complete recovery.

Dr. J. G. Orton’s paper on “Semiology of the Eye, in Medico-Legal Inquiries,” was a very interesting one, describing at length the criminal eye. Discussed by Drs. Lester and Van de Warker.

Dr. Thomas Conant Sawyer, assistant physician in the state’s prison, gave his observations on the use of Dr. Edson’s aseptolin in Auburn prison, and with a few private patients. Discussed by Drs. Lester, Brooks, and Greene.

Dr. Van de Warker showed two specimens from recent hysterectomies. The entire organs were removed in both cases. Discussed by Drs. Brooks and Baker.

Dr. F. W. Higgins then read the following paper on “Tobacco Amblyopia:”

#### TOBACCO AMBLYOPIA.

I wish to say at the beginning of this paper, that I shall make no attempt to present anything novel on the subject of tobacco

amblyopia. It is a subject that has been much discussed during the thirty-three years since Jonathan Hutchinson first clearly connected failing vision with the inordinate use of tobacco. Still the pathology of the disease was not made clear until a dozen years ago, and now there is much difference of opinion among writers upon the question of its real cause. But it is not even an attempt to clear up any one of these disputed points that I have in mind in selecting this topic, but because I think that the ascertained facts in the case have been too much neglected by us as general practitioners. Until the ability to detect the condition is in the possession of the profession generally, it seems to me that many cases are bound to go unrecognised. Even if it is first diagnosed by the eye specialist it can be best treated and its course followed by the family physician.

The *diagnosis* in this, as in any of the bedside cases we are called upon to treat, is of the first importance. Here, fortunately, it is not difficult, if we keep its distinctive features in mind. If a person whom we know to use tobacco, therefore generally a man, who had used it, moreover, for several years, should complain to us of failing of vision, for which he could find no help in spectacles, and affecting both eyes, we should have good grounds to suspect tobacco amblyopia. If then a rough test of the colour fields of vision should show central scotomata for red and green, there could hardly be one chance in a hundred that we were mistaken in deciding that we had a case of this affection on hand. Of course the ophthalmoscope should be used, if for no other reason than to exclude other lesions. I am one of those who believe that the ophthalmoscope should be used by every physician who is capable of using any instrument of precision, since it so often affords a clue to the general disease for which our patient is to be treated. Tabes dorsalis, Bright's disease, and diabetes are only a few of the general diseases in which we may expect to derive some assistance from the ophthalmoscope.

The almost pathognomonic symptom of the toxic amblyopias is the central scotoma for red and green. A very simple and ready way to test for this, when it is suspected, is to have the patient stand directly in front of you at a short distance,—two feet for instance. One of his eyes is to be closed and with the other he is to look directly at your nose. A little piece of red paper is then to be fastened to the end of a pen-holder or anything convenient, and from arm's length at the side to be brought slowly toward your nose. When the patient can first recognise it as red you find that

the object is at an angle of from thirty to forty-five degrees from his eye. As the test object continues to approach your nose, suddenly there is a failure to recognise the colour again. The object can be seen, but looks simply dark, with no distinctive colour. This small spot in which a person is colour-blind includes the fixation point and extends a short distance beyond it, especially toward his temporal side. The same test with a green bit of paper will reveal the same scotoma, while other colours and white will probably be recognised. If the patient stand near a blackboard this field can be mapped out, and still more precisely by the perimeter of which every part is equi-distant from the eye. I have charted the normal field of vision of my own eye for the different colours. This central black spot may represent the scotoma in a typical case of tobacco amblyopia.

Such a typical case would be a man about fifty years old, who had smoked for many years. Chewing, working in a tobacco factory, or rubbing the gums with snuff may bring on the condition, but as a matter of fact, rarely do. The associated use of alcoholics seems to act as a predisposing cause. Indeed, it seems to be proven that the chronic consumption of alcoholic beverages alone may cause an amblyopia indistinguishable from the one we are considering. Much of the literature on the subject has been of the nature of a discussion between those who believe that tobacco is the principal etiological factor in the ordinary toxic amblyopia and those who would ascribe most or all cases to alcohol. The determination of the question is rendered the more difficult by the fact that most of those affected have used both narcotics to a greater or less extent. The English, following the investigations of Hutchinson, Nettleship, and other English investigators, would claim that alcohol amblyopia seldom or never occurs. The French, in their intense loyalty to the published investigations of their fellow-countrymen, almost unanimously declare that alcohol is the sole cause of the retro-bulbar neuritis,—that it causes sclerosis of the optic nerve as it does sclerosis of the liver. The Germans seem willing to allow both causes as the result of their studies. The Americans have done too little original study to have decided opinions on the subject. I think, however, that they admit both.

Often the observation is made that the patient can see better in the evening, or when the light is dim, than in the broad daylight; a case is given of a coachman who could see the numbers on a house in the evening, but could not in the daytime. But this



peculiarity may not be manifested on account of the smallness of the pupil, owing to excessive contraction of the sphincter. Spasm of the ciliary muscle, even, has been noticed.

If one makes an ophthalmoscopic examination, he will discover, if sufficient care is used, that there is an atrophic appearance of the temporal quadrant of the nerve head. This bluish-white colour is hard to describe and I have attempted to have it represented in a drawing from a case given by DeSchweinitz.

Within the last few years there seems to be a pretty general agreement as to the pathology of the disease. This to me forms a very interesting chapter. So long as it is found clinically that only the region of the macula and its immediate neighbourhood are affected, it would be expected that only a *part* of the fibres of the optic nerve would be found diseased. As a fact, this proved to be the case when sufficiently careful microscopic study of the nerve was made. A photograph of the section of a nerve near its peripheral extremity shows that the bundle of fibres lying at the outer and lower side, and destined to supply the territory about the yellow spot, is sclerosed. This change consists of a chronic inflammation with increase of the fibrous tissue lying between the nerve fibres, which by its subsequent contraction produces their atrophy.

A little farther back this bundle of fibres runs in the central part of the optic nerve, instead of peripherally as before. The inflammation is often found to be most extensive near the optic foramen, where the situation of the bundle is entirely central. This fact disposes of the theory that the affection is primarily of the optic sheath and affects the elements of the nerve by pressure or extension. It is a primary nerve lesion.

Exceptional cases have occurred in which the central scotoma has enlarged until it has occupied almost the whole of the colour field. In such a condition we should have a condition of acquired colour-blindness. It is easy to see how in such circumstances a railroad engineer or a pilot who had successfully passed an examination for colour blindness might become unsafe.

The kind of tobacco used may be a factor in the causation of the disease. It is found most among the poorer classes, because they use the cheaper, ranker tobaccos. It is found that the Virginian tobaccos contain two or three times as much nicotine as the Cuban or Maryland product. While it is probable that the other complex alkaloids and chemicals produced in the combustion of the weed are in part responsible for the effect upon the nervous

system, still the percentage of nicotine in a given sample in a general way measures its strength.

The frequency of the affection seems to be greatest in England. In some clinics it reaches as high as one per cent. of all cases treated. Possibly this is due to the fact that more general attention has been called to the disease there, or it may be due to a ranker sort of tobacco in common use. The very high import duty on tobacco and cigars in England does lead to the usage of a cheaper, stronger grade.

A very interesting case is given by Fuchs, in which the same amblyopic condition was brought on by the long-continued use of stramonium smoke for asthma.

The treatment of tobacco amblyopia is very satisfactory, because it is almost always successful; that is to say, it is successful where the conditions are carried out. The *sine qua non* is that the patient shall quit the use of tobacco absolutely. If one has a patient who would rather smoke than to see, the prognosis is bad. Something might be done by smoking in the Turkish style, or greatly lessening the use of it and giving large doses of strychnine; but in the majority of cases no improvement is noticed until the last trace of its use is given up. Small tonic doses of nuxvomica are recommended. Bromide of potassium may be indicated to quiet the nerves while undergoing the tantrums of breaking off the old habit. We are told, too, to give cathartics to take the place of the accustomed laxative effect of the tobacco.

The progress of the case toward recovery may be measured by examining the size of the scotoma from time to time. It will be noticed, too, that as the conductivity of the tract from the retina to the brain centres is increased that the disability to distinguish the two colours, instead of being absolute, is only partial. At times, in a favourable light, the colours will be correctly named in a hesitating manner. Entire recovery may be expected, if the abstinence is continued. An ophthalmic examination may still show a paleness of that portion of the optic nerve, but vision will increase from 6-60 to normal.

The report of the nominating committee was as follows for executive committee for ensuing year:

Broome County,  
Cayuga County,  
Chemung County,  
Chenango County,  
Cortland County,

Dr. John G. Orton.  
Dr. W. R. Laird.  
Dr. F. W. Ross.  
Dr. Leroy Brooks.  
Dr. Homer O. Jewett.

Delaware County,	Dr. W. B. Marrow.
Madison County,	Dr. Martin Cavanna.
Onondaga County,	Dr. Ely Van de Warker.
Otsego County,	Dr. W. J. J. Sweet.
Schuyler County,	Dr. Baxter Smelzer.
Seneca County,	Dr. Frank G. Seaman.
Tompkins County,	Dr. Chauncy P. Biggs.
Tioga County,	Dr. W. L. Tyler.

For secretary, Dr. F. W. Higgins, Cortland County.

The officers were duly elected.

It was decided that the next meeting be held in Norwich, Chenango Co., the first Thursday in June, 1897.

Drs. Frank Kenyon of Scipio, Cayuga Co., and Leroy Lewis of Auburn, Cayuga Co., made application for membership in the association.

FRANK G. SEAMAN, M. D., *President.*

WILLIAM R. LAIRD, M. D., *Secretary.*

## FOURTH DISTRICT BRANCH.

The twelfth annual meeting of the Fourth District Branch was held in the parlours of the Iroquois Hotel, Buffalo, May 12, 1896.

The meeting was called to order by Vice-president Charles G. Stockton.

The minutes of the last meeting were read and approved.

There being no committees to report, the association proceeded to the scientific programme.

The chair announced that the president's address would be omitted, owing to the illness and necessary absence of President Colvin.

The treasurer reported that the receipts in 1895 were \$10.50 and the expenditures were \$14.00.

Upon motion of Dr. Townsend, the report of the treasurer was accepted and adopted.

Dr. George T. Cott presented a paper upon "A Recent Experience with Erythema Nodosum Trachealis."

Dr. Thornton moved that Drs. Cott, Gibson, Mulford, King, and Carroll be invited to become the guests of the association and take part in the scientific proceedings. Carried.

Dr. Cott's paper was discussed by Drs. Gibson, Wyckoff, and Stockton, and the discussion was closed by Dr. Cott.

Dr. C. C. Frederick presented a report of "Some Especially Interesting Cases in Abdominal Surgery."

Dr. Charles G. Stockton read a paper on "Acute Gastritis."

Dr. M. W. Townsend was requested to take the chair.

Dr. Stockton's paper was discussed by Drs. Jones, Rochester, and Wyckoff, and the discussion was closed by the author.

Dr. DeLancey Rochester read a paper, reporting "Two Cases of Intrathoracic Growths."

The paper was discussed by Dr. B. G. Long.

The chair appointed Drs. Jones, Ellinwood, and Stone a committee to nominate the executive committee for the ensuing year. They reported in favour of the following executive committee :

Alleghany County,	Dr. Benjamin C. Wakely.
Cattaraugus County,	Dr. S. J. Mudge.
Chautauqua County,	Dr. T. D. Strong.



Erie County,	Dr. C. C. Wyckoff.
Genesee County,	Dr. M. W. Townsend.
Livingston County,	Dr. B. T. Kneeland.
Monroe County,	Dr. E. M. Moore, Jr.
Niagara County,	Dr. G. P. Eddy.
Ontario County,	Dr. F. R. Bentley.
Orleans County,	Dr. H. C. Tompkins.
Steuben County,	Dr. C. S. Parkhill.
Wayne County,	Dr. S. Ingraham.
Wyoming County,	Dr. Z. J. Lusk.
Yates County,	Dr. William Oliver.

Upon motion of the secretary, the report of the nominating committee was accepted and adopted.

The association then adjourned.

WM. H. THORNTON, M. D., *Secretary.*

## FIFTH DISTRICT BRANCH.

The twelfth annual meeting of this branch was held at 315 Washington street, Brooklyn, on Tuesday, May 26, 1896.

The morning session was called to order by the president, Dr. J. R. Vanderveer, at 11 :30 a. m.

The secretary read the minutes of the last meeting, which were approved.

The report of the committee of arrangements was read and adopted :

BROOKLYN, April 14, 1896.

### REPORT OF THE COMMITTEE OF ARRANGEMENTS FOR THE ANNUAL MEETING, 1896.

Your committee is gratified in reporting that *The Medical News*, now of New York city, has made the very favourable offer to publish all the papers of our present meeting which may be secured for it, together with the discussions, provided the whole be presented in type-written form. Reprints will be furnished to each author without charge.

Your committee also takes satisfaction in reporting that a stenographer has been secured to take down the discussions for a graded compensation, based on the amount of discussion. It is thus now practicable to put both our papers and discussions on permanent record.

The same satisfactory arrangements and terms in regard to the meeting rooms, and catering, as last year, have been secured.

Your committee trusts that the attempt this year to inaugurate the plan of placing our scientific material on record may prove sufficiently successful to be permanent, and thus lend additional interest and benefit to all future meetings.

Respectfully submitted :

J. D. RUSHMORE, M. D., *Chairman.*

N. W. LEIGHTON, M. D.

WM. McCOLLOM, M. D.

H. C. O. STEINKE, M. D.

J. C. BIERWIRTH, M. D.

J. R. VANDERVEER, M. D., } *Ex-officio.*

E. H. SQUIBB, M. D., }

The president asked Dr. N. W. Leighton to act with Dr. A. D. Ruggles and the secretary as registration committee for this meeting.

The president then read his annual address.

In compliance with the by-laws, the secretary next read the last year's minutes of the executive committee, followed by the report for this year :

Your committee found nothing to necessitate calling it together between the regular annual meetings, as all the minor business coming up has been transacted through the mail. The secretary has held his position, although not formally elected according to the by-laws at the regular time, for the lack of a quorum.

The financial condition of the branch continues satisfactory, as will be seen by the treasurer's statement. The receipts for the year were from assessments, \$48, by interest, \$71.68, making a total of \$119.68. The general expenses were \$85.50. The increase in the permanent fund during the year was \$95, making a total now in the fund drawing interest of \$1,325.

The treasurer's accounts have been duly audited and approved, and he was directed to make the same assessment and offer to the permanent fund as last year.

Your committee have fixed the fourth Tuesday in May, 1897, for the next branch meeting, which will be the thirteenth annual.

It is recommended that the general meeting extend a cordial welcome and full privileges of the floor to the invited guests and the delegates from the Kings County Medical Association (names were read, as on page 542).

The nine new fellows who have joined the association since the last branch meeting are, according to custom, exempted from assessment for the ensuing year.

This report was approved as read.

On motion, the invited guests and delegates were cordially welcomed, and full privileges of the floor were extended to them.

The treasurer's annual statement was then read.

The report of the committee on necrology was next read, as follows :

The secretary, as that committee, regrets to have to announce officially that since the last annual meeting of this branch there have been four deaths among the fellows of this district :

Dr. Frederic M. Warner.  
Dr. Richard C. Van Wyck.  
Dr. George Wieber.  
Dr. William O'Meagher.

Drs. Van Wyck and Wieber were original fellows.

The biographical sketches were then called for. Dr. Stephen Smith was not present to read his sketch of Dr. F. M. Warner, and the secretary had not received it as yet. The secretary was, on motion, authorised to receive such when presented.

On request, the secretary read for Dr. I. D. LeRoy his sketch of Dr. R. C. Van Wyck.

The sketch next read of Dr. George Wieber was one read at a recent meeting of the Kings County Medical Association by Dr. N. W. Leighton, and by request of the secretary, a copy secured for this branch with the object of having it appear in the State Transactions as the expression of the State Association, as well as that of the Kings County Association.

The sketch of Dr. William O'Meagher was without a definite author, and consisted of a few facts obtained chiefly from clippings.

On motion, all the sketches were referred, according to custom, to the Committee on Necrology of the State Association for publication.

The scientific business was then taken up. The first paper in order on "The Value of the Practice of Medicine" by Dr. Louis F. Criado, was called for, but the secretary read a letter just received by special messenger from Dr. Criado explaining that both his original manuscript and the type copy had been stolen, so he was unable to present anything.

It was then moved and seconded that the paper be accepted, if afterward presented within a reasonable time, and be published in the regular order. Carried.

Dr. George W. Newman then read his paper on "The Effects of Reflex Irritation on the Temperature and Pulse of Young Children." There was no discussion.

The next business was choosing the nominating committee to elect a new executive committee for the ensuing year. At the call of the secretary, according to custom, the following fellows were chosen by the members present from each county:

Dutchess County,	Dr. Wm. Cramer.
Kings County,	Dr. J. C. Bierwirth.
New York County,	Dr. A. D. Ruggles.
Orange County,	Dr. M. C. Conner.
Putnam County,	(None present).
Queens County,	Dr. E. G. Rave.
Richmond County,	(None present).
Rockland County,	(None present).



Suffolk County,	(None present).
Sullivan County,	(None present).
Ulster County	Dr. H. Van Hoevenberg.
Westchester County,	(None present).

This nominating committee were requested to meet during the coming intermission, and to make their report at the afternoon session.

Adjournment was then taken at 12:40 p. m. for lunch in adjoining rooms, after the president had extended a cordial invitation to all present to join.

The afternoon session was called to order by the president at 2:15 p. m., and the scientific business resumed. The first paper read was by Dr. Edward Fridenberg on "Latent Mastoid Disease." It was discussed by Drs. A. Mathewson, J. E. Sheppard, H. A. Alderton, and the author.

The next paper was on "Enteroptosis" by Dr. Max Einhorn. Discussed by Dr. Jacob Fuhs and the author.

Dr. Charles E. Lockwood then read his paper on "The Diseases of the Skin Observed in the General Practice of Twenty-five Years, and their most Effectual Methods of Treatment, with some Illustrative Cases." Discussed by Dr. J. McF. Winfield and the author.

Dr. Wm. R. Pryor's paper on "How can Suppuration be best Prevented in Acute Pelvic Inflammations?" was called for, but not responded to (it reached the secretary after the meeting, with a note stating a confinement case had prevented its presentation on time).

The closing paper was by Dr. Edward von Dönhoff on "The Comedy of Errors in the Technique of Modern Operative Surgery." Discussed by Dr. Rawlings Nichol of New York, a guest.

The nominating committee then made its report, nominating the following executive committee to represent:

Dutchess County,	Dr. William Cramer.
Kings County,	Dr. J. C. Bierwirth.
New York County,	Dr. A. D. Ruggles.
Orange County,	Dr. M. C. Conner.
Putnam County,	Dr. G. W. Murdock.
Queens County,	Dr. E. G. Rave.
Richmond County,	Dr. W. C. Walser.
Rockland County,	(Vacant by death).
Suffolk County,	Dr. W. A. Hulse.
Sullivan County,	Dr. J. A. Munson.
Ulster County,	Dr. H. Van Hoevenberg.
Westchester County,	Dr. E. F. Brush.

On motion, the report was accepted and approved, and the committee discharged.

The president then called for a meeting of this new committee for immediately after adjournment, to elect a secretary for the ensuing year.

Adjourned at 5:05 p. m., to meet on the fourth Tuesday in May, 1897.

E. H. SQUIBB, *Secretary*.

The register showed thirty-four fellows, two delegates, and eight guests present.

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#### EXECUTIVE COMMITTEE.

A called meeting of the executive committee was held at 315 Washington street, Brooklyn, on Tuesday, May 26, 1896. The meeting was called to order by the president, Dr. J. R. Vanderveer, at 10:15 a. m.

Present:	Dr. J. R. Vanderveer.
	Dr. R. M. Wyckoff.
	Dr. H. Van Hoevenberg.
	Dr. A. D. Ruggles.
	Dr. E. G. Rave.
	Dr. M. C. Conner.
	Dr. E. H. Squibb.

The secretary read the minutes of the last meeting, which were accepted as read.

The secretary announced that the committee of arrangements for the twelfth annual meeting had been chosen unanimously by circular vote. The report of this committee was then read, accepted, and adopted.

The president appointed Dr. A. D. Ruggles to act with the secretary as registration committee, together with an additional fellow later from the general meeting.

The secretary then read the names of the deceased fellows of the Fifth District for the past year:

Dr. Frederic M. Warner.
Dr. Richard C. Van Wyck.
Dr. George Wieber.
Dr. Wm. O'Meagher.

Drs. Van Wyck and Wieber were original fellows.

The treasurer next read his itemised accounts and submitted his annual statement. The president appointed Dr. Van Hoevenberg

to audit the accounts, and the vouchers and cash book were handed over.

TREASURER'S ANNUAL STATEMENT, MAY 28, 1895, TO MAY 25, 1896.

*Fifth District Branch, New York State Medical Association,  
with E. H. Squibb, Treasurer.*

DR.

To balance, cash as per statement May 28, 1895 .	\$168.48	
Assessments collected . . . . .	48.00	
Interest collected . . . . .	71.68	
	<hr/>	\$288.16

CR.

By rent of meeting rooms for the Eleventh Annual meeting . . . . .	\$10.00	
Catering for the Eleventh Annual meeting .	50.00	
Postage . . . . .	14.00	
Printing and envelopes . . . . .	7.00	
Cigars for the Twelfth Annual meeting . .	4.50	
Balance on hand . . . . .	202.66	
	<hr/>	\$288.16

PERMANENT FUND ACCOUNT.

DR.

To total amount of fund as per statement May 28, 1895 . . . . .	\$1,230.00	
Contributions to fund to date . . . . .	95.00	
	<hr/>	\$1,325.00

CR.

By investment in railroad bond (5% Int.) .	\$830.00	
Balance on hand at interest . . . . .	495.00	
	<hr/>	\$1,325.00

After some preliminary remarks it was resolved to hold the next meeting of this branch in Brooklyn on the fourth Tuesday in May, 1897—the Thirteenth Annual meeting.

The secretary announced that he had again held over in office without a formal election, due to the lack of a quorum at the called meeting for that purpose.

To attempt to remedy this now frequent failure to formally elect a secretary, Dr. Wyckoff moved that the president and secretary

be chosen as a committee with power to consider the advisability of adopting the plan of electing the secretary by a circular correspondence vote whenever the executive committee fails to accomplish this result at the time appointed by the by-laws. Carried.

The names of the following invited guests were read:

Dr. J. del Risco,	Dr. H. A. Alderton,
Dr. F. W. Badner,	Dr. Jacob Fuhs,
Dr. Arthur Mathewson,	Dr. J. McF. Winfield,
Dr. J. E. Sheppard,	Dr. S. Sherwell—all of Brooklyn,
and Drs. J. H. Etheridge and Fernand Henrotin of Chicago.	

And the following delegates from the Kings' County Medical Association:

Dr. A. Brinkman,	Dr. H. C. Riggs,
Dr. A. C. Brush,	Dr. C. T. Schondelmeier,
Dr. E. S. Hodgskin,	Dr. Jerome Walker,
Dr. J. J. O'Connell,	Dr. Chas. Ware,
Dr. E. Reynolds,	Dr. Adolph Wieber.

Upon motion these guests and delegates were extended a hearty welcome and full privileges of the floor.

After some discussion, the treasurer was directed to make the assessment for 1896 at \$1, as last year, together with the same offer to join the permanent fund with its restricting limit.

On motion, nine new fellows were, according to custom, exempted from assessment for 1896.

Dr. Van Hoevenberg here reported that he had examined the treasurer's accounts and found them in accord. On motion, then the committee approved the treasurer's report.

The outline report of this meeting to the general meeting was next read, accepted, and adopted.

Adjourned at 10:45 a. m.

E. H. SQUIBB, *Secretary.*



# NEW YORK COUNTY MEDICAL ASSOCIATION.

## ANNUAL REPORT.

The following is a synopsis of the scientific work of this Association during the period extending from October, 1895, to October, 1896: Papers and discussions on

### PRACTICE OF MEDICINE.

At the meeting held October 21, 1895, a paper was read on "Diet and Muscular Exercise in the Treatment of Tuberculosis," by Dr. T. J. McGillicuddy. Discussion by Drs. J. B. White, Einhorn, Gleitsmann, and others, and closed by Dr. McGillicuddy.

November 18, 1895, a paper on "Diagnosis and Treatment of Gout," by Dr. Louis F. Bishop. Discussed by Drs. Einhorn, Bulkley, and Quinlan, and closed by Dr. Bishop.

On the same evening, a paper was read on "Some Notes on the Functions of the Cerebro-Spinal Fluid, gathered from Lectures Delivered at the Faculté de Medecine, Paris," by Dr. James A. Campbell.

April 20, 1896, a paper on "Hypnotism as a Therapeutic Agent," by Dr. Louis Lichtschein. Discussion by Drs. Schmid and Leszynsky, and closed by Dr. Lichtschein.

May 18, 1896, a paper on "The Diagnosis and Treatment of Paralysis of Peripheral Origin," by Dr. W. M. Leszynsky. Discussion by Drs. Berg and Bishop, and closed by Dr. Leszynsky.

At the same meeting a paper was read on "Experience with Pilocarpine in the Treatment of Uremia of Bright's Disease," by Dr. Charles J. Proben. Discussion by Drs. J. Lewis Smith and J. B. White, and closed by Dr. Proben.

### SURGERY.

December 16, 1895, a paper on "Sprains," by Dr. E. Von Dönhoff. Discussion by Drs. Erdmann, Judson, Milliken, Henry, Rose, Gallant, and Manley, and closed by Dr. Von Dönhoff.

At the same meeting Dr. J. F. Erdmann read a "Clinical Report

of a Case of Excision of the Head of the Humerus and Half of the Glenoid Fossa of the Scapula ; also Carcinoma of the Leg, following a Compound Fracture." The first case was discussed by Drs. Von Dönhoff and Manley. In connection with the second case the specimen was presented.

#### DISEASES OF THE THROAT AND NOSE.

October 21, 1895, a paper on "Lymphoid Hypertrophies at the Vault of the Pharynx (so-called Adenoids) and their Relations to Rhino-Pharyngeal Catarrh," by Dr. J. Solis-Cohen, of Philadelphia. Discussion by Drs. Gleitsmann, Delavan, and Quinlan, and closed by Dr. Solis-Cohen.

January 15, 1896, a paper entitled, "Remarks on Naso-Pharyngeal Inflammation," by Dr. J. Lewis Smith. Discussion by Drs. Quinlan, McGregor, and others, and closed by Dr. Smith.

#### DISEASES OF THE EYE.

March 16, 1896, a paper on "Syringing in Lachrymal Disease," by Dr. W. H. Bates. Discussion by Drs. Oppenheimer, Hepburn, Fridenberg, and others, and closed by Dr. Bates.

#### OBSTETRICS.

March 16, 1896, a paper on "Obstetrics in General Literature," by Prof. Theophilus Parvin, of Philadelphia.

#### EXHIBITION OF CASES, INSTRUMENTS, ETC.

October 21, 1895, a description and demonstration of an improved uterine nozzle, by Dr. Samuel Brothers.

At the same meeting, a demonstration of the otoscope devised by Dr. Kirschstein, of Berlin, by Dr. J. W. Gleitsmann.

On the same evening, also, Dr. F. J. Quinlan presented a lad, the subject of inherited syphilis, who showed the typical hard palate of degenerates.

May 18, 1896, Dr. Louis F. Bishop presented a case of primary plugging of the brachial artery in a girl of fifteen.

At the same meeting, Dr. T. H. Manley presented a sarcomatous tumor, weighing twenty-five ounces, which he had removed from a face ; also a specimen of gangrenous intestine, due to traumatism.

At the annual meeting in January, 1896, the following officers were chosen :

President—DR. JOSEPH E. JANVRIN.

Vice-president—DR. HERMAN J. BOLDT.

Recording Secretary—DR. P. BRYNBERG PORTER.

Corresponding Secretary—DR. NATHAN G. BOZEMAN.

Treasurer—DR. JOHN H. HINTON.

Member of Executive Committee—DR. JOHN SHRADY.

At the meeting held February 17, 1896, the retiring president, Dr. S. B. W. McLeod, delivered a valedictory address, in which he gave an interesting résumé of the history and progress of the Association during the past seven years. This was followed by an address of the president-elect, Dr. Joseph E. Janvrin, who concluded with a paper entitled "The Ultimate Results, in My Own Experience, of Vaginal Hysterectomy for Cancer Originating in the Cervix Uteri."

The attendance at the monthly meetings has been unusually large, and the interest manifested in the discussions of the several papers has been general, as will be seen by reference to the individual subjects mentioned in the preceding report.

It is our sad duty to record the deaths of the following members of the Association :

Dr. John Van Buren Green, March 17, 1896.

Dr. Joseph E. Drum, April 10, 1896.

Dr. James T. Petters, July 19, 1896.

Dr. John H. McGiven, July 21, 1896.

Dr. Charles W. Weinholtz, August 7, 1896.

Dr. John L. Hopkins, August 21, 1896.

Dr. Alexander Buchanan, September 2, 1896.

Dr. Sylvanus S. Mulford, September 9, 1896.

The foregoing report is respectfully submitted to the State Medical Association, as a brief summary of the scientific work of the New York County Medical Association during the current year.

JOSEPH E. JANVRIN, *President*.

## ANNUAL REPORT OF THE KINGS COUNTY MEDICAL ASSOCIATION.

During the year of 1896, there have been held nine regular meetings of this Association. These meetings have been almost invariably well attended, and much interest has been manifested in the papers, and in the discussion of them. At the beginning of the year, arrangements were made for full stenographic reports of the discussion of all papers read before the Association, both the papers and discussion, to be published in *The Medical News*. The number of papers read before the Association was six; notable among them were the following, viz.:

"The Diagnostic Features of Cutaneous Syphilis," by Dr. George Henry Fox, of New York city.

"A Year's Results in the Treatment and Prevention of Diphtheria with Antitoxin," by Dr. William H. Park.

"The Medico-Legal Aspect of Insanity, with Reference to Commitments, Jury Trials, and Expert Testimony," by Dr. J. J. O'Connell. This paper was discussed by Hon. Willard Bartlett, Hon. George B. Abbott, and others.

There were many interesting cases, specimens, and new instruments presented from time to time. Also, during the past year, this Association took an active stand against the so-called anti-vivisection bill, which was pending in congress. Strong resolutions were passed by this Association, setting forth the perniciousness of that measure, and its unalterable antagonism to it, and copies of said resolutions were forwarded to each congressman from Brooklyn. Replies from each representative were received, stating that prompt attention would be given, when the bill came before them.

The membership roll is appended to this report.

The officers elected were as follows:

President—J. C. BIERWIRTH.

Vice-president—L. A. W. ALLEMAN.

Recording Secretary—F. C. RAYNOR.

Corresponding Secretary—J. SCOTT WOOD.

Treasurer—E. H. SQUIBB.



Elected members of the Executive Committee—J. D. RUSHMORE, term expires January, 1897; R. M. WYCKOFF, term expires January, 1898; T. M. ROCHESTER, term expires January, 1899; JONATHAN WRIGHT, term expires January, 1900.

New members . . . . .	20
Resignation . . . . .	1
Net gain . . . . .	19
Total membership . . . . .	131

J. SCOTT WOOD, *Corresponding Secretary*.  
172 Sixth Ave., Brooklyn.

# PROCEEDINGS.

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## THIRTEENTH ANNUAL MEETING

OF THE

NEW YORK STATE MEDICAL ASSOCIATION,

HELD AT THE MOTT MEMORIAL HALL, 64 MADISON AVENUE, NEW  
YORK CITY, OCTOBER 13, 14, AND 15, 1896.

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FIRST DAY, OCTOBER 13.

MORNING SESSION.

The meeting was called to order at 10:15 a. m., by the PRESIDENT, DR. DARWIN COLVIN, of Wayne county. He said:

FELLOWS OF THE ASSOCIATION:—I greet you on the first day of the thirteenth annual meeting of the Association, and fully agree with the sentiment once expressed by an eminent Fellow of this Association, now deceased, who said: "It is a swift current—that stream of life on which we ride." It seems but yesterday, and in this hall, that I heard the familiar phrase "Good-by" frequently uttered, and yet the frosts of winter, the vernal showers, and the heat of summer have come and gone, and we have again gathered ourselves together after, I trust, having been diligent in the "free and unlimited coinage" of all those mental products which are best calculated to advance the growth and prosperity of this Association. And now, gentlemen, after reiterating the thanks expressed a year ago, and craving your coöperation in the discharge of those duties which are before you, we will proceed to carry out the programme of the session.

The report of the Committee of Arrangements was presented by the Chairman, DR. JOHN G. TRUAX, and on motion was accepted and adopted.

The Annual Report of the Council was then read by the SECRETARY. On motion the report was accepted.

The SECRETARY moved that the action of the Council with reference to the question of legislation affecting vivisection in the District of Columbia be endorsed, and that the SECRETARY be instructed to send a notice of this action to the proper authorities.

DR. THOMAS H. MANLEY said that one year ago he had submitted a matter to the consideration of the Council, and he did not fully understand what action the Council had taken with reference to it.

The SECRETARY replied that this matter had been referred to the Chairman of the Council, the PRESIDENT, who had reported that he had concluded it unwise for the State Association to interfere in such local matters.

DR. MANLEY said that he could not quite understand this action, as he had called attention to a great outrage which had been committed upon the members of the medical profession, including a number of the members of this Association. He referred to the high-handed turning out of hospital positions of a number of physicians, both in and out of this Association. The proceeding had been condemned by every one who had expressed any opinion regarding it.

DR. MANLEY then moved that this matter be referred back to the Council, and that they hear a report on the merits of the case, and report upon it to the Association at this meeting. He said that he made this motion as a matter of simple justice; he did not ask for any favour, but simply for the judgment from their peers. If the action referred to were right, then there could not be anything in any code. It was by no means a local matter, but one which concerned the whole medical profession in the United States, as it involved an important principle.

DR. H. D. DIDAMA seconded the motion.

The SECRETARY said that personally he was thoroughly in accord with any opposition to high-handed and violent proceedings, particularly in the discharge of members of the medical staffs without any opportunity for defense, as was done in the case under discussion. The difficulty met with was that the action was taken largely, if not entirely, by the ordinary lay and legal authorities of the city of New York. These things were of such frequent occurrence that it was sometimes very delicate to investigate.

However, it seemed to him that in this State Association the matter should come up before the local District Branch of the Association if the matter were to be reviewed.

DR. J. G. TRUAX, of New York county, said that he had been removed from the hospital at the same time as Dr. Manley, although he was reappointed by the new board. There was nothing right about the manner in which these removals were made, but it was done by the commissioners of charities and correction, who had the legal right to do it. If it were Dr. Manley's intention to condemn the commissioners, it was right to do so, but he did not see how we could censure any one else. It would be just as wrong now, if we could put back these men who had been removed—it would be just as great an injustice as in the original instance. He agreed with Dr. Ferguson that it was a decidedly local matter, and he could not see how the Association could meddle with such matters without getting more or less covered with dirt. The commissioners cared nothing for what any medical association would do—indeed, they had very little respect for the medical profession, because the physicians had very little respect for themselves.

DR. MANLEY said that he did not wish to be restored to his position, and would not accept it if it were offered him. What he wished to emphasise was that the commissioners were powerless to impose such injustice and insult on the physicians, if the physicians would stand by one another. The commissioners would say to-day that this matter was forced upon them by the medical colleges. All that he asked was the opinion and the final judgment of the Council on this matter.

The motion was then put and carried.

The reports of the Branch Associations were then read by title.

DR. THOMAS H. MANLEY then offered the following resolution :

*To the Surgeon-General of the Marine Hospital Service of the United States :*

DEAR SIR :

WHEREAS, DR. JOHN B. HAMILTON, of Chicago, Ill., surgeon to the Marine Hospital of that city, professor of surgery in the Rush Medical College, and editor of the *Journal of the American Medical Association*, has been ordered to vacate his present position, and report for duty at San Francisco ; and

WHEREAS, Dr. Hamilton, a native of Illinois and graduate of the Rush Medical College, occupies a responsible position as editor of the leading medical organ and exponent of medical science in this country, for the great success of which of late years its enlarged circulation and unparalleled prosperity for widening the



influence of, and extending the benefits of, the American Medical Association, all must admit we are chiefly indebted to Dr. Hamilton ;

WHEREAS, the removal of Dr. Hamilton, of Chicago, and his withdrawal from the editorship of the *Journal of the American Medical Association* would be a great loss to the entire profession of the United States ; therefore be it

*Resolved*, That the Medical Association of the state of New York, appreciating the rare qualities of Dr. Hamilton, as a scholar, a teacher, and a fearless editor, and his labours in the past in the defense of non-sectarian medicine, and his efforts to raise the standard of the medical profession in the United States of America, respectfully petition the president of the United States and the surgeon-general of the Marine Hospital Service to reconsider or rescind the above-named order, and permit Dr. Hamilton to continue in Chicago at his post, believing that by so doing the interests of the Marine Hospital Service will not be neglected, and those of the medical profession best protected.

On motion, the Association adopted this resolution.

The Nominating Committee was appointed as follows :

First District—DRS. DOUGLAS AYRES and W. H. ROBB.

Second District—DRS. E. M. LYON and J. H. HANNAN.

Third District—DRS. J. M. FARRINGTON and F. G. SEAMAN.

Fourth District—DRS. T. D. STRONG and W. M. BEMUS.

Fifth District—DRS. J. R. VANDERVEER and J. G. TRUAX.

At large—DR. JOHN CRONYN.

On motion, the Association adjourned at 12 m.

#### AFTERNOON SESSION.

The meeting was called to order by the PRESIDENT at 1:40 p. m.

The following committee on the Treasurer's Accounts was appointed by the PRESIDENT : DRS. THOMAS D. STRONG, DOUGLAS AYRES, and E. M. LYON.

On motion, the Association adjourned at 5 p. m.

#### EVENING SESSION.

The meeting was called to order by the PRESIDENT at 8 p. m.

The session was devoted to scientific matters, and adjourned at 10 p. m.

## SECOND DAY, OCTOBER 14.

### MORNING SESSION.

The meeting was called to order by the PRESIDENT, at 10 a. m.  
The following delegate's report was offered :

OCTOBER 13, 1896.

*To the N. Y. State Medical Association :*

MR. PRESIDENT :—Agreeable to appointment as delegate, the undersigned has attended two meetings of the Rhode Island Medical Society held in Providence during this year, on the 5th of March and on June 4. The first was the annual meeting, devoted mostly to executive business, in which were re-elected President Dr. E. P. Clarke of Hope Valley, and Secretary Frank L. Day of Providence. At both meetings scientific papers were read, among which were, on June 4, a very interesting lecture by Prof. George H. Fox of this city, on "The Diagnostic Features of Cutaneous Syphilis," illustrated by lantern slides.

The society holds quarterly meetings, mostly in Providence, and sometimes in other places by special invitation.

All of which is respectfully submitted.

ROBERT NEWMAN.

After the usual scientific session, adjournment was taken at 1 p. m.

### AFTERNOON SESSION.

The meeting was called to order by the PRESIDENT, at 2 p. m.

After the usual scientific session, the Association adjourned at 5 p. m.

### EVENING SESSION.

The meeting was called to order by the PRESIDENT, at 8:30 p. m.

After the address on surgery, the usual collation was served.

## THIRD DAY, OCTOBER 15.

### MORNING SESSION.

The meeting was called to order by the PRESIDENT, at 10:15 a. m.

The Committee on Treasurer's Accounts reported that they had examined these accounts, and had found them correct. They also re-

ported that the thanks of the Association were due to Dr. Ferguson, the treasurer, not only for the correctness of the accounts, but for the excellent financial showing he had been able to make.

On motion, the report was adopted.

#### REPORT OF THE NOMINATING COMMITTEE.

The Nominating Committee reported as follows :

President—Dr. CHARLES PHELPS, of New York county.

First District—Dr. R. N. COOLEY, Vice-president.

Dr. JOHN P. SHARER, Member of Council.

Second District—Dr. E. M. LYON, Vice-president.

Dr. T. H. HANNAN, Member of Council.

Third District—Dr. ROBERT ABERDEIN, Vice-president.

Dr. L. J. BROOKS, Member of Council.

Fourth District—Dr. A. A. HUBBELL, Vice-president.

Dr. W. M. BEMUS, Member of Council.

Fifth District—Dr. C. E. DENISON, Member of Council.

On motion, this report of the Nominating Committee was deposited as the ballot of the Association, and these officers were declared elected.

DR. DARWIN COLVIN : Gentlemen—The work of the thirteenth session of the New York State Medical Association is done. As a culmination of my pleasant duties, it only remains for me to present to you the future president of your choice, DR. CHARLES PHELPS, of New York.

DR. CHARLES PHELPS : Gentlemen of the Association—I beg to thank you for the honour conferred upon me, and while I realise that it is quite unmerited, and I fear, not altogether a wise choice, I shall still do whatever lies in my power to make the fourteenth session of the Association as successful as the present.

On motion of the secretary, the Association adjourned at 11 : 45 a. m., *sine die*.

ANNUAL REPORT OF THE COUNCIL  
AND  
MINUTES OF THE SESSIONS OF THE COUNCIL,  
FOR THE YEAR 1896.

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The Council met for its thirteenth annual session at the Mott Memorial Library, on Monday evening, October 12, 1896, and the session was opened at 8:30 p. m.

Present: The Chairman, Dr. D. Colvin, and Drs. Brooks, Ferguson, Flint, Gouley, Seaman, Truax, Wilson.

The Secretary presented the following list of applicants for Fellowship, each of the applications being duly approved, viz.: William B. Coley, Samuel Alexander, Frank Kenyon, R. N. Blanchard, Thomas I. Henning, W. J. Hunt, Allen N. Moore, J. M. Hagey, George T. Cott, Henry J. Mulford, J. B. de Landeta, E. Paul Sale (non-resident).

On motion, they were all appointed Fellows.

The Secretary then presented the

*Report of the Committee on Publications.*

The Committee has the following report to offer: An edition of one thousand copies of Volume 12 has been printed, and distributed to those of our members entitled to receive copies, and to the State Societies, certain libraries and exchanges. The volume contains 611 pages, and the execution of the press work has been satisfactory. The editor was obliged to employ some assistance, but the edition and distribution cost less than \$1,500.

[Signed] E. D. FERGUSON,  
*Chairman and Editor.*

The Secretary then reported that he had subscribed for the *Index Medicus*, which should be on file in the library.

The Chairman of the Library Committee then presented the



*Twelfth Annual Report of the Library Committee of the New York State Medical Association.*

October 12, 1896.

The Library Committee has the honour to present the twelfth annual report of the library of the Association, which shows an increase of only thirty-five volumes over the last report. On the 1st of October, 1895, the number of volumes in the library was 9,503. Since that date, thirty-five volumes were received, making a total of 9,538 volumes. Among these were Transactions of various State Societies, received in exchange for Transactions of this Association, the Index Catalogue—new series—of the library of the Surgeon-General United States Army, and several miscellaneous medical works and medical journals. During the current year ending September 30, 108 visitations were made to the library by Fellows of the Association, other physicians, and medical students.

J. W. S. GOULEY, M. D.,

*Director of the Library and Chairman of the Committee.*

The Secretary then presented certain correspondence relative to the effort being made to pass through congress certain legislative restriction of experimentation on the lower animals. After discussion, the following was adopted, subject to the approval of the Association in general session:

WHEREAS, It being generally known that vigorous efforts are made to induce congress to enact laws so restrictive of experimentation on the lower animals in the District of Columbia that the result would be to hamper that line of investigation so as to preclude the possibility of useful results, and

WHEREAS, We being conscious that the medical profession is the peer of any class in its devotion to the broad principles of humanity, in its desire to alleviate or minimize all suffering, and

WHEREAS, The experimentation is made in the very great majority of instances under the influence of an anaesthetic, both for the convenience of the experimenter and for the prevention of suffering, and

WHEREAS, That in the rare instances in which some pain may be inflicted, it is moderate and of brief duration, and is not to be contrasted with the amount or degree of suffering constantly inflicted by the owners of animals in their daily use of them, and even by parents toward their children, and

WHEREAS, The privilege for free experimentation has recently resulted in some of the greatest advances in the art and science of medicine, and promises even greater advances in the near future, whereby the health and comfort of men and animals will be promoted, therefore,

*Resolved*, That the New York State Medical Association is opposed to the enactment of any law intended to hamper the med-

ical profession in the District of Columbia or elsewhere in the prosecution of biological, physiological, surgical, or therapeutical investigations on the lower animals, aside from such laws as are intended to punish persons for the infliction of needless or cruel suffering, and which laws should apply to all persons alike.

On motion the chairman was authorised to appoint a committee of three on legislation. [And he subsequently appointed Drs. H. D. Didama, Austin Flint, and E. D. Ferguson, with Dr. Ferguson chairman.]

The chairman reported in the matter of the resolutions referred to him by the Council from the general session, that he had concluded it unwise for the State Association to interfere in such local matters.

The report was accepted and approved.

The Treasurer reported as follows :

#### NEW YORK STATE MEDICAL ASSOCIATION.

##### ANNUAL REPORT OF THE TREASURER, FROM OCTOBER 1, 1895, to OCTOBER 1, 1896.

###### RECEIPTS—GENERAL FUND.

Balance from last report . . . . .	\$2,861.45	
Dues . . . . .	2,225.00	
Initiation . . . . .	115.00	
Sale of Transactions . . . . .	54.00	
Interest . . . . .	75.00	
	<hr/>	\$5,330.45

###### DISBURSEMENTS.

Sundries, including Transactions . . . .	\$1,846.15	
Postage stamps . . . . .	92.00	
Express and freight . . . . .	54.82	
	<hr/>	1,992.97
Balance in General Fund, October 1, 1896,		\$3,337.48

###### LIBRARY AND BUILDING FUND.

Amount at last report . . . . .	\$2,833.41	
Interest . . . . .	87.50	
	<hr/>	2,920.91
Total funds in treasury October 1, 1896,		\$6,258.39

This report shows a net increase in all the funds of \$563.53.

[Signed] E. D. FERGUSON, *Treasurer.*

The report was accepted and the report referred to the general session.

The bill of Angell for printing, amounting to \$48.25, was audited and allowed.

Dr. Austin Flint then presented the report of the Committee on Criminology.

The report was accepted and referred to the general session.

It was as follows :

*Report of the Committee on Criminology.*

Your committee, appointed at the last meeting of the Council, to confer with a Committee of Conference to be appointed by the Prison Association of New York and to report on criminology, has the honour to present the following report :

The committee appointed by the Prison Association consisted of Mr. George C. Holt, Mr. Eugene Smith, and Dr. Frederick Peterson. On December 10, 1895, both Committees of Conference met with the Executive Committee of the Prison Association. The chief subject of discussion at this meeting was the question of the amendment to the constitution of the state of New York, prohibiting productive prison labour. This most important subject was discussed at length by several members of the Prison Association and by all the members of your committee. The following paper, issued by the Prison Association, formed the basis for discussion :

“THE PRISON LABOUR AMENDMENT.

“At a special meeting of the Executive Committee of the Prison Association of New York, held while the Constitutional Convention was considering the prison labour amendment, the following minute and resolutions were unanimously adopted :

“*Resolved*, That the proposed amendment to the constitution relating to prison labour (Article 3, Section 29, of the constitution adopted by the late convention), as it prohibits the manufacture by the convicts of any goods to be sold or given away, would, if adopted, forbid the employment of productive industry in the prisons and condemn the prisoners to enforced idleness. The proviso in the amendment, that the convicts may be employed in the manufacture of goods to be used in the prisons or in other public institutions of the state, is illusory and affords slight relief, for the reason that the goods used in most institutions are now largely manufactured by their own inmates ; and, under the operation of this proviso, it is not probable that five (5) per cent. of the prisoners could be kept at work.

“The effect of the proposed amendment is not left to conjecture : it has been already tested. In 1888 an act was passed by the legislature of this state (known as the Yates law), which was substantially identical in its provisions with the proposed constitutional amendment. It contained precisely the same interdiction of productive labour in the prisons, excepting only the manufacture of articles needed and used in the public institutions of the state. The effect of this law was most disastrous ; it abolished labour in the prisons, and the convicts, confined in their cells and debarred from employment, made piteous appeals to the authorities to be allowed to go to work ; as the idleness continued, the prisoners constantly deteriorated morally and physically, they became more and more restive and mutinous, until the prisons were seriously threatened with outbreak and riot. The injurious operation of this law was so strikingly manifest that it was repealed the following year by common consent ; and the legislature then adopted a codification of the prison laws of the state (known as the Fassett law) which has received universal commendation as the most enlightened and scientific system of prison law ever enacted within the United States. This admirable system, which is the one now in force, the constitutional amendment proposes to abolish and to substitute for it a system of compulsory idleness in the prisons.

“*Resolved*, That the objections made by the Prison Association to the proposed amendment rest upon the following compositions :

“1. Productive industry is an indispensable instrumentality for the reformation of the convict. Without its aid, it is impossible to awaken in the prisoner healthy ambitions, to develop habits of thrift and labour, to qualify the convict to earn an honest living after his discharge, or to create within him either the desire or the capacity to abandon his life of crime.

“2. Idleness is ruinous to the morals of the prison. Its inevitable effect on the prisoner is physical and moral degradation ; criminal thoughts and purposes take possession of his mind ; he becomes confirmed in his revolt against law and against society, and he leaves the prison upon his discharge a more confirmed and desperate criminal than when he entered it.

“3. The proposed amendment will add an enormous burden of taxation to those now borne by the people of this state. This burden will be the heavier because of its gross injustice. There is no possible reason why the prisoners should not work for their support or why the state should maintain them in idleness. The only argument urged against their labour is that it competes with free labour. Statisticians have asserted that the aggregate product of prison labour is less than one per cent. of the total of all labour throughout the United States. But even if the competition were appreciable, the cost of maintaining prisoners in idleness must be borne by taxation which falls with the heaviest incidence on the free labourer ; such increased taxation will prove a severer burden than the competition of prison labour to the free workman.

“4. The proposed amendment is a long backward step in prison legislation. It would prove fatal to all those advanced methods of



prison reform which are the fruit of modern prison science, which have achieved marvelous results in reforming convicts and which have demonstrated that proximately 80 per cent. of all convicts can be reclaimed from crime and made to be law-abiding and self-supporting. All these methods and agencies of reformation rest upon productive convict labour as their foundation and cornerstone. The state of New York has heretofore taken the lead in America in the development of a scientific reformatory system of prison discipline. But this proposed constitutional amendment abolishing labour in prison will place the state of New York alone, among all the states of the Union in the establishment of a prison system, the counterpart of which must be sought for in uncivilised and barbarous countries or in medieval history.

CHARLTON T. LEWIS, *President.*

EUGENE SMITH, *Secretary.*

### “ARTICLE III.

#### “COPY OF THE AMENDMENT.

“SECTION 29. The legislature shall, by law, provide for the occupation and employment of prisoners sentenced to the several state prisons, penitentiaries, jails, and reformatories in the state; and on and after the first day of January, in the year one thousand eight hundred and ninety-seven, no person in any such prison, penitentiary, jail, or reformatory, shall be required or allowed to work, while under sentence thereto, at any trade, industry, or occupation, wherein or whereby his work, or the product or profit of his work, shall be farmed out, contracted, given, or sold to any person, firm, association, or corporation. This section shall not be construed to prevent the legislature from providing that convicts may work for, and that the products of their labour may be disposed of to, the state or any political division thereof, or for or to any public institution owned or managed and controlled by the state, or any political division thereof.

“As has been said: The previous pages were written prior to the adoption of the amendment to the constitution.

“The amendment—now a part of the constitutional law of the state—will, in effect, throw at least four fifths of the inmates of our prisons and penitentiaries into absolute idleness. No system of public work for prisoners has been devised that appears at all practicable to those best qualified to judge. The financial burden to the state will be greatly increased, and it is not likely that any legislature will add to the burden by appropriating the money necessary to put the prisons on a strictly educational basis. The amendment does not become operative until January 1, 1897. In the hope of averting the disaster to the state, that is sure to be caused by its operation, the Prison Association introduced into the senate and assembly last year, a resolution as follows, which was passed by both houses without any considerable opposition:

“Concurrent resolution of the Senate and Assembly, proposing amendment to Article III, Section 29, of the constitution, relating to prison labour.

“The people of the state of New York, represented in Senate and Assembly, do enact as follows :

*Resolved* (if the Senate concur), That Section 29, Article III, of the constitution be amended so as to read as follows :

“All prisoners sentenced to the several state prisons, penitentiaries, jails, and reformatories of the state shall be kept occupied and employed at labour ; and on and after the first day of January, eighteen hundred and ninety-seven, no such prisoner shall be required or allowed to work at any trade, industry, or occupation wherein or whereby his labour or time shall be farmed out or contracted to any person, firm, organisation, or corporation. The legislature shall provide for the employment of such prisoners, as far as practicable, upon public work, or in the manufacture of supplies required for the use of public institutions owned or managed and controlled by the state, or any political division thereof.”

This resolution must be again passed by the two houses of the legislature during the present session, and submitted to a popular vote. We ask your influence in securing its success, and thus preventing a calamity to the state.

W. M. F. ROUND,  
*Corresponding Secretary.*

The outcome of this discussion, as far as your committee is concerned, was a proposition by your committee to prepare a letter to be sent to every member of the New York State Medical Association, which letter forms part of this report. This proposition was accepted by the Prison Association :

#### “NEW YORK STATE MEDICAL ASSOCIATION.

##### “COMMITTEE ON CRIMINOLOGY.

“AUSTIN FLINT, M. D., *Chairman.*

J. W. S. GOULEY, M. D.

WILLIAM A. WHITE, M. D., *Secretary.*

Binghamton State Hospital,  
Binghamton, N. Y.

“NEW YORK, ———, 1896.

“DEAR DOCTOR : The Committee on Criminology appointed at the last annual meeting of the New York State Medical Association to confer and act with a similar committee of the Prison Association of New York find that a most serious evil threatens the welfare of the people of this state ; an evil to which it is our desire to direct your attention and request your aid in averting.

“In 1894, the Constitutional Convention, despite the earnest

protests of those interested in prison reform throughout the state, passed an amendment to the constitution, which, when it goes into effect (January 1, 1897), will result in reducing to idleness fully four fifths of the prison population. It is hardly possible to compute the evil results of such a policy. Experience, however, has shown, both in this country and abroad, and more especially recently during the operation of the Yates law in 1888, a law in every respect similar to the constitutional amendment under consideration, that the prisoners reduced to idleness degenerate physically and morally, they become refractory and impatient of discipline, give themselves up to the control of criminal thoughts, speculations, and propensities, and leave the prisons at the expiration of their sentences more confirmed enemies of law and order and a greater source of danger to the community than when they entered. Further than this, it is acknowledged by all authorities that we have in productive labour the best means through which to operate for the reclaiming of the prisoner from his criminal ways—a means which experience has shown can accomplish about eighty per cent. of reformations of young offenders under favourable circumstances.

“From the above facts we are in a position to see what this constitutional amendment means. It means the reduction to idleness of a large number of able-bodied persons fully capable of earning a living, with the consequent burdening of the citizens by increased tax rates for their support: it means the turning loose into the community every year, by expiration of sentence, of a large number of confirmed criminals who are a constant menace to the lives and property of its members; and it means the destruction of one of the best agents for reformation that we have at our disposal.

“The only argument educed for the perpetration of such a stupendous mistake is that prison labour competes with honest labour. A glance at the following table, abstracted from the annual report of the Prison Association of New York for 1894, is sufficient to answer such a statement. It shows the condition of affairs under the operation of the Fassett law now in operation, and which is probably one of the most enlightened statutes regarding prison labour ever enacted.

TABLE OF NUMBER EMPLOYED IN PRISONS IN RELATION TO NUMBER EMPLOYED IN SIMILAR TRADES OUTSIDE THE PRISONS.

INDUSTRIES.	Sing Sing.	Auburn.	Clinton.	Total.	Employed in same industries outside.	
Tailoring.....	353	53	.....	406	50,000	8-10 of 1 per cent.
Furniture-making.....	.....	194	.....	194	15,559	1½ per cent.
Iron casting.....	.....	121	.....	121	42,078	3-10 of 1 per cent.
Shirt-making.....	.....	.....	425	425	18,678	2½ per cent.
Shoe-making.....	100	.....	.....	100	16,170	3-5 of 1 per cent.
Broom-making.....	.....	80	.....	80	11,000	¾ of 1 per cent.
Saddlery and harness.....	.....	65	.....	65	3,200	2 per cent.
Granite and stone-cutting..	87	160	.....	247	14,500	1 6-10 per cent.
Total.....	540	673	425	1,638	171,185	

"To forestall the effect of this amendment, the Prison Association had introduced into the legislature of 1895 a solution which, if it becomes a law, will practically restore the operation of the Fassett law. This resolution passed both houses; but in order to come to popular vote in the fall of 1896, it must again pass both houses of the legislature which has just convened.

"It is to the furtherance of this end that we address you this letter. We wish between now and the time when this matter shall come to vote, to reach personally, through our Association, every member of the legislature and have the subject presented to him by a scientific man capable of appreciating all its details. If you are acquainted with the legislative representatives of your district, we urge you to exert your personal influence to secure their allegiance to our cause; if not, be so kind as to present this letter to any of your brother physicians who are in a position to aid in this way.

"Trusting that our united efforts will be able to attain the desired results, averting a great evil on the one hand, and on the other, continuing in operation a law which is potent for good, we remain,

"Fraternally yours,

"AUSTIN FLINT,

"J. W. S. GOULEY,

"WILLIAM A. WHITE,

"Committee."



Your committee also sent the following letter to the president of the State Commission of Prisons, recommending the Bertillon system, and are happy to be able to report that this system has already been adopted in many institutions in the state :

THE MEDICAL ASSOCIATION OF THE STATE OF NEW YORK,  
No. 60 East 34th St.,  
NEW YORK, December 10, 1895.

*Hon. Lispenard Stewart, President of the State Commission of Prisons, Albany, N. Y.:*

DEAR SIR: The committee appointed by the New York State Medical Association to confer with a similar committee of the Prison Association of New York, on questions connected with criminology and penology, have the honour to recommend what is known as the Bertillon system of identification of prisoners, for adoption throughout the state. This system not only renders the identification of prisoners absolute, but is of the greatest scientific value in connection with the study of criminology and anthropology and questions relating thereto. On grounds of usefulness to the people, as well as its high scientific value, we hope that this system will be adopted and carried into execution.

I am, my dear sir,

Yours very truly,

AUSTIN FLINT, M. D., *Chairman*,  
JOHN W. S. GOULEY, M. D.,  
WILLIAM A. WHITE, M. D.

The effort in behalf of prison labour reform was, unfortunately, not crowned with success, notwithstanding a cordial response to our appeal on the part of many members of the New York State Medical Association ; but the conferences of your committee with the members of the Prison Association did much to strengthen the movement in the direction of prison reform, and your committee believes that a continuance of combined action on the part of the two associations will be of much practical benefit.

Two of the members of your committee, residing in the city of New York, have been elected members of the executive committee of the Prison Association, and the meetings of this committee have been of peculiar interest, to which, as members of the medical profession, they may reasonably hope to contribute in some degree.

It is unfortunate that the constitution and by-laws of the New York State Medical Association do not permit the election, as honorary members of the Association, of members of the Prison Asso-

ciation who are not members of the medical profession, but it is respectfully suggested that an invitation be extended to the executive committee of the Prison Association to attend the meetings of the New York State Medical Association and participate freely in its proceedings, which would add largely to the interest and practical value of discussions and action relating to criminology.

All of which is respectfully submitted,

AUSTIN FLINT, M. D., New York county, *Chairman*,  
J. W. S. GOULEY, M. D.,  
WM. A. WHITE, M. D.

The Council then adjourned.

[Signed]      E. D. FERGUSON.

The Council for 1896-'97 met immediately on the close of the annual session of the Association for 1896, and the Chairman announced that he had appointed Dr. F. H. Wiggin as member of the Council at large.

There were present: the Chairman, Dr. Phelps, and Drs. Aberdeen, Bemus, Brooks, Denison, Ferguson, Gouley, Hannan, Lyon, Truax, and Wiggin.

The following were appointed Fellows of the Association, viz.: J. D. Montmarquet, John W. Atwood, George Essig, Carl C. Mann, McDonald Moore, A. M. Shrady, Adolph Wieber, Edward D. Woodhull, LeRoy Lewis.

The members of the Council for the Fifth District were appointed a committee of arrangements with power to add to their number, and the fourteenth annual meeting was fixed for Tuesday, October 12, 1897.

The members of the Council for the Second District were appointed the Committee on Publications, with the Secretary as Chairman and Editor, and the Editor was authorised to employ aid in his work and charge the same to the Association.

It was voted that the sum of one hundred dollars be paid to the trustees of the Mott Memorial library, in addition to the regular annual contribution.

Dr. Brooks offered the following:

Inasmuch as the Medical Association of the state of New York has no responsibility for the political or economical acts of the commissioners of charities of the city of New York, it cannot therefore use its influence in adjusting differences between individuals and that body. Adopted.

The committee on legislation was authorised to attend to legislative matters affecting the Association or the profession, and in particular was directed to secure a just representation for the Association on the Board of State Medical Examiners.

[Signed] E. D. FERGUSON, *Secretary*.

# LIST OF FELLOWS.

BY DISTRICT AND COUNTY.

---

## FIRST OR NORTHERN DISTRICT.

### FULTON COUNTY.

Original. Blake, Clarence R. Northville.  
Drake, D. Delos. Johnstown.  
Edwards, John. Gloversville.

3

### HAMILTON COUNTY.

McGann, Thomas. Wells.

1

### HERKIMER COUNTY.

Casey, J. E. Mohawk.  
Douglass, A. J. Ilion.  
Douglas, Edgar H. Little Falls.  
Garlock, William D. Little Falls.  
Original. Glidden, Charles H. Little Falls.  
Greene, H. H. Paine's Hollow.  
Original. Potter, Vaughan C. Starkville.  
Original. Sharer, John P. Little Falls.  
Original. Young, John D. Starkville.

9

### JEFFERSON COUNTY.

Founder. Crowe, J. Mortimer. Watertown.  
Original. Johnson, Parley H. Adams.

2



## LEWIS COUNTY.

Crosby, Alexander H. Lowville.  
 Douglass, Charles E. Lowville.  
 Joslin, Albert A. Martinsburgh.  
 Kelley, John D. Lowville.

4

## MONTGOMERY COUNTY.

Original. Ayres, Douglas. Fort Plain.  
 Caldwell, Nathan A. Hageman's Mills.  
 French, S. H. Amsterdam.  
 Original. \*Graves, Ezra. Amsterdam.  
 Original. Johnson, Richard G. Amsterdam.  
 Klock, Charles M. St. Johnsville.  
 Original. Leach, H. M. Charlton City, Mass.  
 Meyer, George L. Stone Arabia.  
 Parr, John. Buell.  
 Parsons, W. W. D. Fultonville.  
 Founder. Robb, William H. Amsterdam.  
 Simons, Frank E. Canajoharie.  
 Smyth, Arthur V. H. Amsterdam.

13

## ONEIDA COUNTY.

Armstrong, James A. Clinton.  
 Original. Bagg, Moses M. Utica.  
 Barnum, D. Albert. Cassville.  
 Original. Blumer, G. Alder. Utica.  
 Bond, George F. M. Utica.  
 Original. Booth, Wilbur H. Utica.  
 Original. Brush, Edward N. Towsen, Md.  
 Churchill, Alonzo. Utica.  
 Clarke, Wallace. Utica.  
 Dodge, Amos P. Oneida Castle.  
 Douglass, James W. Booneville.  
 Ellis, J. B. Whitesborough.  
 English, G. P. Booneville.  
 Fitzgerald, John F. Rome.

\*Deceased.

- Fraser, Jefferson C. Ava.  
 Fuller, Earl D. Utica.  
 Gibson, William M. Utica.  
 Holden, Arthur L. Utica.  
 Hughes, Henry R. Clinton.  
 Original. Hunt, James G. Utica.  
 Kuhn, William. Rome.  
 Munger, Charles. Knoxboro.  
 Nelson, William H. Taberg.  
 Nold, John B. Utica.  
 Palmer, Henry C. Utica.  
 Palmer, Walter B. Utica.  
 Phelps, George G. Utica.  
 Founder. Porter, Harry N. Washington, D. C.  
 Reid, Christopher C. Rome.  
 Russell, Charles P. Utica.  
 Scully, Thomas P. Rome.  
 Sutton, H. C. Rome.  
 Sutton, Richard E. Rome.  
 Swartwout, Leander. Prospect.  
 Sweeny, James M. Utica.  
 Tefft, Charles B. Utica.  
 West, Joseph E. Utica.

## OSWEGO COUNTY.

- Bacon, Charles G. Fulton.  
 Bates, Nelson W. Central Square.  
 Cooley, F. L. Oswego.  
 Cooley, R. N. Hannibal Centre.  
 Original. DeWitt, Byron. Oswego.  
 Huntington, John W. Mexico.  
 Johnson, George P. Mexico.  
 Marsh, E. Frank. Fulton.  
 Todd, John P. Parish.

## ST. LAWRENCE COUNTY.

- Cook, Guy Reuben. Louisville.

## SECOND OR EASTERN DISTRICT.

## ALBANY COUNTY.

- Abrams, H. C. Newtonville.  
 Founder. Bailey, Theodore P. Albany.  
 Haynes, John U. Cohoes.  
 Montmarquet, J. D. Cohoes.  
 Founder. Peters, Samuel. Cohoes.  
 Rulison, L. B. West Troy.  
 Founder. Sabin, William B. West Troy.  
 Original. Van Vranken, Adam T. West Troy.  
 Whitbeck, Charles E. Cohoes.  
 Zeh, Merlin J. West Troy.

10

## CLINTON COUNTY.

- Founder. Dodge, Lyndhurst C. Rouse's Point.  
 Holcomb, O. A. Plattsburgh.  
 Founder. Lyon, E. M. Plattsburgh.

3

## COLUMBIA COUNTY.

- Original. Benham, John C. Hudson.  
 Bradley, O. Howard. Hudson.  
 Clum, Franklin D. Cheviot.  
 Fritts, Crawford Ellsworth. Hudson.  
 Johnson, Henry W. Hudson.  
 Original. Lockwood, J. W. Philmont.  
 Original. Smith, H. Lyle. Hudson.  
 Vedder, George W. Philmont.  
 Wheeler, John T. Chatham.  
 Founder. Wilson, Thomas. Claverack.  
 Woodruff, R. Allen. Philmont.  
 Woodworth, T. Floyd. Kinderhook.

12

## ESSEX COUNTY.

- Founder. Barton, Lyman. Willsborough.  
 Barton, L. G. Willsborough.

- Original. D'Avignon, Francis J.    Au Sable Forks.  
 Original. LaBell, Martin J.    Lewis.  
 Original. Riley, Andrew W.    Au Sable Forks.  
 Original. Robinson, Ezra A.    Jay.  
 Original. Turner, Melvin H.    Ticonderoga.

GREENE COUNTY.

- Original. Conkling, George.    Durham.  
           Getty, A. H.    Athens.  
 Original. Selden, Robert.    Catskill.

RENSSELAER COUNTY.

- Original. Allen, Amos.    Grafton Centre.  
 Founder. Allen, Charles S.    Greenbush.  
           Allen, William L.    Greenbush.  
           Baynes, Joseph E.    Troy.  
           Bissell, James H.    Troy.  
           Bonesteel, H. F.    Troy.  
 Founder. Bonesteel, William N.    Troy.  
 Original. Bontecou, Reed B.    Troy.  
           Boyce, Elias B.    Averill Park.  
 Founder. Burbeck, Charles H.    Troy.  
           Burton, Henry B.    Troy.  
           Cahill, John T.    Hoosick Falls.  
           Church, Thomas C.    Valley Falls.  
 Original. Cooper, William C.    Troy.  
           Crounse, Andrew C.    Melrose.  
           Dickinson, M. D.    Troy.  
           Dickson, Thomas Gordon.    Troy.  
 Founder. Ferguson, E. D.    Troy.  
 Founder. Finder, William.    Troy.  
           Gravatt, Edwin J.    Troy.  
           Greenman, C. E.    Troy.  
 Founder. Hannan, James C.    Hoosick Falls.  
           Hannan, Thomas H.    Hoosick Falls.  
 Founder. Harvie, J. B.    Troy.  
 Original. Heimstreet, Thomas B.    Troy.  
 Original. Houston, David W.    Troy.



- Hutton, M. B. Valley Falls.  
 Keith, Halbert Lyon. Upton, Mass.  
 Original. Lyon, George E. St. Louis, Mo.  
 Lyons, Edward L. Troy.  
 Original. Magee, Daniel. Troy.  
 Marsh, James P. Troy.  
 Morehouse, E. W. Troy.  
 Founder. Nichols, Calvin E. Troy.  
 Founder. Nichols, William H. West Sand Lake.  
 Phelan, Michael F. Troy.  
 Original. Rogers, S. Frank. Troy.  
 Founder. Rousseau, Zotique. Troy.  
 Founder. Seymour, W. Wotkyns. Troy.  
 Original. Skinner, Smith A. Hoosick Falls.  
 Smith, Frederick A. Troy.  
 Tompkins, Fred J. Lansingburgh.  
 Ward, R. H. Troy.

## SARATOGA COUNTY.

- Allen, Henry J. Corinth.  
 Founder. Comstock, George F. Saratoga Springs.  
 Original. Crombie, Walter C. Mechanicsville.  
 Curtis, P. C. Round Lake.  
 Original. Dunlop, John J. Waterford.  
 Gow, Frank F. Schuylerville.  
 Founder. Grant, Charles S. Saratoga Springs.  
 Original. Hall, William H. Saratoga Springs.  
 Founder. Hodgman, William H. Saratoga Springs.  
 Hudson, George. Stillwater.  
 Humphrey, J. F. Saratoga Springs.  
 Inlay, Erwin G. Saratoga Springs.  
 Original. Johnston, Ianthus G. Greenfield Centre.  
 Keefer, Charles W. Mechanicsville.  
 Kniskern, A. C. Mechanicsville.  
 Moriarta, D. C. Saratoga Springs.  
 Original. Murray, Byron J. Saratoga Springs.  
 Palmer, F. A. Mechanicsville.  
 Parent, J. S. Birchtown.  
 Original. Preston, John R. Schuylerville.  
 Founder. Reynolds, Tabor B. Saratoga Springs.

- Sherer, John D.    Waterford.  
 Sherman, F. J.    Ballston.  
 Smith, F. A.    Corinth.  
 Original. Stubbs, Roland H.    Waterford.  
 Swan, William E.    Saratoga Springs.  
 Swanick, A. A.    Saratoga Springs.  
 Sweetman, J. T., Jr.    Ballston.  
 Thompson, Amos W.    Saratoga Springs.  
 Varney, Miles E.    Saratoga Springs.  
 Webster, W. B.    Schuylerville.  
 Zeh, Edgar.    Waterford.

32

SCHENECTADY COUNTY.

- Hammer, Charles.    Schenectady.  
 Original. McDonald, George E.    Schenectady.  
 McDougall, R. A.    Duaneburgh.  
 Original. Reagles, James R.    Schenectady.  
 Original. Van Zandt, Henry C.    Schenectady.  
 Veeder, Andrew T.    Pittsburgh, Pa.

6

SCHOHARIE COUNTY.

- Original. Hagadorn, William.    Gilboa.  
 Original. Kingsley, Henry F.    Schoharie.

2

WARREN COUNTY.

- Fitzgerald, David J.    Glens Falls.  
 Henning, Thomas I.    Glens Falls.  
 Hunt, W. J.    Glens Falls.  
 Original. Martine, Godfrey R.    Glens Falls.  
 Montgomery, J. J.    Luzerne.

5

WASHINGTON COUNTY.

- Lambert, John.    Salem.  
 Long, Alfred J.    Whitehall.

2

## THIRD OR CENTRAL DISTRICT.

## BROOME COUNTY.

- Allen, S. P. Whitney's Point.  
 Founder. Chittenden, Joseph H. Binghamton.  
 Dudley, Dwight. Maine.  
 Eastman, L. O. Union.  
 Original. Ely, Henry Oliver. Binghamton.  
 Farnham, LeRoy D. Binghamton.  
 Farrington, John M. Binghamton.  
 Forker, Frederick L. Binghamton.  
 Greene, Clark W. Binghamton.  
 Guy, J. D. Chenango Forks.  
 Original. Hills, Lyman H. Binghamton.  
 Hough, F. P. Binghamton.  
 Killen, Jack. Binghamton.  
 Knapp, W. H. Union Centre.  
 Meacham, Isaac D. Binghamton.  
 Michael, F. M. Binghamton.  
 Moore, William A. Binghamton.  
 Founder. Orton, John G. Binghamton.  
 Pierce, Edward A. Binghamton.  
 Pierson, G. E. Kirkwood.  
 Place, John F., Jr. Binghamton.  
 Founder. Putnam, Frederick W. Binghamton.  
 Original. Race, W. F. Kearney, Neb.  
 Founder. Richards, Charles B. Binghamton.  
 Rodgers, Harris C. Binghamton.  
 Seymour, Ralph A. Whitney's Point.  
 Slater, Frank Ellsworth. Binghamton.  
 Smith, Edward L. Binghamton.  
 White, William A. Binghamton.

## CAYUGA COUNTY.

- Kenyon, Frank. Scipio.  
 Original. Kenyon, M. Moravia.  
 Original. Laird, William R. Auburn.  
 Lewis, Le Roy. Auburn.  
 Founder. Sawyer, Conant. Auburn.

Original.   Tripp, John D.   Auburn.  
                  Woodruff, E. Gould.   Auburn.

7

CHEMUNG COUNTY.

Original.   Brown, Charles W.   Washington, D. C.  
                  Drake, E. G.   Elmira.  
 Original.   Ross, Frank W.   Elmira.  
                  Squires, Charles L.   Elmira.  
 Original.   Wales, Theron A.   Elmira.

5

CHENANGO COUNTY.

Original.   Blair, Louis P.   McDonough.  
 Original.   Brooks, Leroy J.   Norwich.  
                  Copely, Herman D.   Bainbridge.  
                  Douglas, George.   Oxford.  
                  Hand, S. M.   Norwich.  
                  Hayes, Philetus A.   Afton.  
 Original.   Johnson, Leonard M.   Greene.  
 Original.   Lyman, H. C.   Sherburne.  
                  Noyes, James B.   New Berlin.  
                  Packer, Thurston G.   Smyrna.  
                  Smith, Samuel L.   Smithville.  
                  Thompson, R. A.   Norwich.  
                  Van Wagner, L. A.   Sherburne.  
                  Williams, George O.   Greene.

14

CORTLAND COUNTY.

                 Bradford, George D.   Homer.  
 Original.   Clark, DeWitt.   Marathon.  
                  Didama, E. A.   Cortland.  
                  Halbert, M. L.   Cincinnatus.  
 Founder.   Hendrick, Henry C.   McGrawville.  
                  Higgins, F. W.   Cortland.  
 Founder.   Jewett, Homer O.   Cortland.  
                  Kenyon, Benjamin.   Cincinnatus.  
                  Reese, Frank D.   Cortland.

9



## DELAWARE COUNTY.

Drake, James B. Hancock.  
 Morrow, William B. Walton.  
 Smith, George C. Delhi.  
 Travis, Edward M. Eagle Grove, Ia.

4

## MADISON COUNTY.

Original. Birdsall, Gilbert. N. Brookfield.  
 Burhyte, O. W. Brookfield.  
 Cavana, Martin. Oneida.  
 Original. Carpenter, Henry W. Oneida.  
 Drake, Frank C. Oneida.  
 Huntley, James F. Oneida.  
 Miles, George W. Oneida.  
 Original. Nicholson, A. R. Madison.

8

## ONONDAGA COUNTY.

Original. Aberdein, Robert. Syracuse.  
 Brown, Ulysses H. Syracuse.  
 Campbell, A. J. Syracuse.  
 Founder. Dallas, Alexander J. Syracuse.  
 Founder. Didama, Henry D. Syracuse.  
 Original. Donohue, Florince O. Syracuse.  
 Earle, George W. Tully.  
 Original. Edwards, Amos S. Syracuse.  
 Original. Edwards, George A. Syracuse.  
 Flanigan, John R. Syracuse.  
 Original. Hatch, C. A. Syracuse.  
 Founder. Head, Adelbert D. Syracuse.  
 Original. Jacobson, Nathan. Syracuse.  
 Founder. Kneeland, Jonathan. South Onondaga.  
 Magee, Charles M. Syracuse.  
 Original. McNamara, Daniel. Syracuse.  
 Original. Munson, W. W. Otisco.  
 Founder. Parsons, Israel. Marcellus.  
 Original. Saxer, Leonard A. Syracuse.  
 Sears, F. W. Syracuse.

Founder. Van de Warker, Ely.    Syracuse.  
Original. Whitford, James.    Onondaga Valley.

22

OTSEGO COUNTY.

Original. Barney, C. S.    Milford.  
            Church, B. A.    Oneonta.  
            Ford, M. L.    Oneonta.  
Founder. Leaning, John K.    Cooperstown.  
Original. Martin, John H.    Otego.  
Original. \*Merritt, George.    Cherry Valley.  
            Sweet, Joshua J.    Unadilla.

7

SCHUYLER COUNTY.

King, James K.    Watkins.  
Roper, P. B.    Alpine.  
Leffingwell, E. D.    Watkins.  
Smelzer, Baxter T.    Havana.

4

SENECA COUNTY.

Bellows, George A.    Waterloo.  
Blaine, Myron D.    Willard.  
Clark, George W.    Waterloo.  
Founder. Lester, Elias.    Seneca Falls.  
            Seaman, Frank G.    Seneca Falls.  
            Welles, S. R.    Waterloo.

6

TIOGA COUNTY.

Original. Ayer, W. L.    Owego.  
            Cady, George M.    Nichols.

2

TOMPKINS COUNTY.

Founder. Beers, John E.    Danby.  
            Biggs, Chauncey P.    Ithaca.  
            Flickinger, John.    Trumansberg.

3

\*Deceased.

## FOURTH OR WESTERN DISTRICT.

## ALLEGHANY COUNTY.

Original. Wakely, Benjamin C. Angelica.

1

## CATTARAUGUS COUNTY.

Eddy, John L. Olean.

Ellsworth, Victor A. Boston, Mass.

Lake, Albert D. Gowanda.

Mudge, Selden J. Olean.

Original. Tompkins, Orrin A. East Randolph.

5

## CHAUTAUQUA COUNTY.

Founder. Ames, Edward. Kalamazoo, Mich.

Bemus, Morris N. Jamestown.

Bemus, William Marvin. Jamestown.

Blanchard, R. N. Jamestown.

Founder. Dean, Harmon J. Brocton.

Moore, Macdonald. Fredonia.

Richmond, Nelson G. Fredonia.

Rolph, R. T. Fredonia.

Founder. Strong, Thomas D. Westfield.

9

## ERIE COUNTY.

Andrews, Charles H. Holland.

Original. Atwood, H. L. Collins Centre.

Original. Bartlett, Frederick W. Buffalo.

Bennett, Arthur G. Buffalo.

Bergtold, W. H. Buffalo.

Original. Boies, Loren F. East Hamburg.

Original. Briggs, Albert H. Buffalo.

Brooks, Mark N. Springville.

Brown, George L. Buffalo.

Bryant, Percy. Buffalo.

Burghardt, Francis Augustus. Buffalo.

Clendenan, C. W. N. Tonawanda.

- Cohen, Bernard. Buffalo.  
 Congdon, Charles E. Buffalo.  
 Cooke, Almon H. Buffalo.  
 Cott, George F. Buffalo.  
 Founder. Cronyn, John. Buffalo.  
 Original. Dagenais, Alphonse. Buffalo.  
 Original. Daniels, Clayton M. Buffalo.  
 Dayton, C. L. Buffalo.  
 Original. Dorland, Elias T. Buffalo.  
 Fell, George E. Buffalo.  
 Fowler, Joseph. Buffalo.  
 Frederick, Carlton C. Buffalo.  
 Gould, Cassius W. Buffalo.  
 Green, Stephen S. Buffalo.  
 Original. Greene, DeWitt C. Buffalo.  
 Founder. Greene, Joseph C. Buffalo.  
 Original. Greene, Walter D. Buffalo.  
 Original. Harrington, D. W. Buffalo.  
 Hartwig, Marcell. Buffalo.  
 Hayd, Herman E. Buffalo.  
 Heath, William H. Buffalo.  
 Himmelsbach, George A. Buffalo.  
 Howard, Charles F. Buffalo.  
 Founder. Hoyer, F. F. Tonawanda.  
 Hubbell, Alvin A. Buffalo.  
 Hunt, H. L. Orchard Park.  
 Ingraham, Henry D. Buffalo.  
 Jackson, William H. Springville.  
 Original. Johnson, Thomas M. Buffalo.  
 Jones, Allen A. Buffalo.  
 Lapp, Henry. Clarence.  
 Long, Ben D. Buffalo.  
 McFarlane, William A. Springville.  
 Mulford, Henry J. Buffalo.  
 Original. Murray, William D. Tonawanda.  
 Original. Pettit, John A. Buffalo.  
 Phelps, William C. Buffalo.  
 Pohlman, Julius. Buffalo.  
 Rochester, DeLancy. Buffalo.  
 Stockton, Charles G. Buffalo.  
 Strong, Orville C. Colden.  
 Taber, R. C. Tonawanda.



- Thornton, William H. Buffalo.  
 Founder. Tremaine, William S. Buffalo.  
 Trull, H. P. Williamsville.  
 Twohey, John J. Buffalo.  
 Wall, Charles A. Buffalo.  
 Wheeler, Isaac G. Marilla.  
 Whipple, Electa B. Buffalo.  
 Willoughby, M. Buffalo.  
 Founder. Wyckoff, Cornelius C. Buffalo.

63

## GENESEE COUNTY.

- Andrews, Lewis B. Byron.  
 Original. Crane, Frank W. Corfu.  
 Founder. Jackson, Albert P. Oakfield.  
 Prince, Alpheus. Byron.  
 Stone, Frank L. Le Roy.  
 Founder. Townsend, Morris W. Bergen.

6

## LIVINGSTON COUNTY.

- Original. Briggs, William H. Hemlock Lake.  
 Brown, J. P. Tuscarora.  
 Dodge, Frank H. Mount Morris.  
 Hagey, J. M. Mount Morris.  
 Jones, George H. Fowlerville.  
 Kneeland, B. T. Dalton.  
 Original. Menzie, R. J. Caledonia.  
 Original. Moyer, Frank H. Moscow.

8

## MONROE COUNTY.

- Original. Backus, Ogden. Rochester.  
 Original. Buckley, James. Rochester.  
 Original. Burke, John J. A. Rochester.  
 Curtis, D. F. Rochester.  
 Original. Dunning, J. D. Webster.  
 Fenno, Henry M. Rochester.  
 Goler, George W. Rochester.  
 Founder. Hovey, B. L. Rochester.

- Jones, S. Case. Rochester.  
 Maine, Alva P. Webster.  
 McDougall, William D. Spencerport.  
 Founder. Moore, Edward M. Rochester.  
 Original. Moore, Edward M., Jr. Rochester.  
 Original. Moore, Richard Mott. Rochester.  
 Original. O'Hare, Thomas A. Rochester.  
 Original. Pease, Joseph. Hamlin.  
 Reitz, Charles. Webster.  
 Schopp, Justin H. Rochester.  
 Snook, George M. Parma.  
 Stocksclaeder, P. Rochester.

20

## NIAGARA COUNTY.

- Eddy, George P. Lewiston.  
 Huggins, William Q. Sanborn.  
 Moore, Allan N. Lockport.

3

## ONTARIO COUNTY.

- Founder. Bentley, Francis R. Cheshire.  
 De Laney, John Pope. Geneva.  
 Original. Hicks, W. Scott. Bristol.  
 Pratt, Frank R. Manchester.  
 Founder. Simmons, E. W. Canandaigua.  
 Original. Vanderhoof, Frederick D. Phelps.

6

## ORLEANS COUNTY.

- Original. Bailey, William C. Knoxville, Tenn.  
 Founder. Chapman, James. Medina.  
 Curtis, Daniel. Jeddo.  
 Original. Taylor, John H. Holley.  
 Founder. Tompkins, H. C. Knowlesville.

5

## STEUBEN COUNTY.

- Chittenden, Daniel J. Addison.  
 Conderman, George. Hornellsville.

- Original. Dunn, Jeremiah. Bath.  
 Original. Ellison, Metler D. Canisteo.  
 Gilbert, Horatio. Hornellsville.  
 Hubbard, Chauncey G. Hornellsville.  
 Hunter, Nathaniel P. Jasper.  
 Original. Jamison, John S. Hornellsville.  
 Parkhill, C. S. Hornellsville.  
 Rudgers, Denton W. Hornellsville.  
 Walker, James E. Hornellsville.  
 Wallace, Edwin E. Jasper.

12

## WAYNE COUNTY.

- Founder. Arnold, J. Newton. Clyde.  
 Atwood, John W. Marion.  
 Brandt, J. S. Ontario Centre.  
 Founder. Colvin, Darwin. Clyde.  
 Horton, David B. Red Creek.  
 Original. Ingraham, Samuel. Palmyra.  
 Original. Landon, Newell E. Newark.  
 Nutten, Wilbur F. Newark.  
 Original. Sprague, John A. Williamson.  
 Sprague, L. S. Williamson.  
 Original. Young, Augustus A. Newark.

11

## WYOMING COUNTY.

- Original. Ellinwood, A. G. Attica.  
 Fisher, John C. Warsaw.  
 Greene, Cordelia A. Castile.  
 Hulette, G. S. Arcade.  
 Lusk, Zera J. Warsaw.  
 Mann, Carl C. Warsaw.  
 Original. Palmer, George M. Warsaw.  
 Original. Rae, Robert. Portageville.

8

## YATES COUNTY.

- Oliver, William. Penn Yan.

1

## FIFTH OR SOUTHERN DISTRICT.

### DUTCHESS COUNTY.

- Baker, Benjamin N. Rhinebeck.  
 Original. Barnes, Edwin. Pleasant Plains.  
 Barton, Thomas J. Tivoli.  
 Original. Bates, Xyris T. Poughkeepsie.  
 Original. Bayley, Guy Carleton. Poughkeepsie.  
 Founder. Coddington, George H. Amenia.  
 Founder. Cramer, William. Poughkeepsie.  
 Original. Fletcher, Charles L. Wing's Station.  
 Howland, George T. Poughkeepsie.  
 Julian, John M. Pleasant Valley.  
 Founder. \*Kittridge, Charles M. Fishkill-on-Hudson.  
 Founder. Leroy, Irving D. Pleasant Valley.  
 Founder. Pultz, Monroe T. Stanfordville.  
 Van Etten, Cornelius S. Rhinebeck.

14

### KINGS COUNTY.

- Alleman, L. A. W. Brooklyn.  
 Baker, Frank R. Brooklyn.  
 Founder. Baker, George W. Brooklyn, E. D.  
 Beardsley, William E. Brooklyn.  
 Bierwirth, Julius C. Brooklyn.  
 Original. Biggam, William H., Jr. Brooklyn.  
 Original. Brundage, Amos H. Brooklyn.  
 Original. Conway, John Francis. Brooklyn.  
 Coffin, Laurence. Brooklyn.  
 Creamer, Joseph, Jr. Brooklyn, E. D.  
 Criado, Louis F. Brooklyn.  
 Essig, George. Brooklyn.  
 Feeley, James F. Brooklyn, E. D.  
 Hicks, Edward E. Brooklyn.  
 Huestis, W. B. Brooklyn.  
 Hughes, Peter. Brooklyn.  
 Hull, Thomas H. Brooklyn.  
 Original. Ilgen, Ernst. Brooklyn.  
 Original. Jenkins, John A. Brooklyn, E. D.

\*Deceased.



- Jewett, F. A. Brooklyn.
- Original. Leighton, Nathaniel W. Brooklyn.  
Little, Frank. Brooklyn.
- Original. Lloyd, T. Mortimer. Brooklyn.
- Original. McCollom, William. Brooklyn.  
Milbury, Frank S. Brooklyn.
- Original. Minard, E. J. Chapin. Brooklyn.  
Newman, George W. Brooklyn.
- Original. North, Nelson L. Brooklyn.  
Ostrander, George A. Brooklyn.  
Page, Emmett D. Brooklyn.
- Original. Paine, Arthur R. Brooklyn.  
Peele, Francis. Brooklyn.
- Original. Pray, S. R. Brooklyn.  
Price, Henry R. Brooklyn.  
Raynor, F. C. Brooklyn.  
Reed, Henry B. Brooklyn.  
Richardson, John E. Brooklyn.  
Risch, Henry F. W. Brooklyn.  
Rochester, Thomas M. Brooklyn.
- Founder. Rushmore, John D. Brooklyn.
- Original. Russell, William G. Brooklyn.
- Founder. Segur, Avery. Brooklyn.
- Original. Shepard, A. Warren. Brooklyn.
- Original. Sizer, Nelson Buell. Brooklyn.
- Founder. Squibb, Edward H. Brooklyn.
- Founder. Squibb, Edward R. Brooklyn.
- Original. Steinke, C. O. H. Brooklyn.  
Sullivan, John D. Brooklyn.  
Thwing, Clarence. Fort Wrangel, Alaska.  
Waterworth, William. Brooklyn.  
Wieber, Adolph. Brooklyn.
- Original. Williams, William H. Brooklyn.
- Founder. Wyckoff, Richard M. Brooklyn.

## NEW YORK COUNTY.

- Adams, Calvin Thayer. New York.
- Agramonte, Aristides. New York.
- Agramonte, E. V. New York.
- Alexander, Samuel. New York.

- Original. Allen, S. Busby. New York.  
           Allen, Thomas H. New York.  
           Anderson, R. Harcourt. New York.  
           Andrews, John L. New York.  
           Arango, Augustin. New York.  
 Original. Arcularius, Lewis. New York.  
 Original. Arnold, Edmund S. F. New York.  
           Arnold, Glover C. New York.  
           Baldwin, F. A. New York.  
           Bermingham, Edward J. New York.  
 Original. Biggs, Herman M. New York.  
 Founder. Bozeman, Nathan. New York.  
           Bozeman, Nathan G. New York.  
           Brodrick, William P. New York.  
 Original. Bryant, Joseph D. New York.  
 Original. \*Buchanan, Alexander. New York.  
 Original. Bull, Charles Stedman. New York.  
           Bull, William T. New York.  
 Original. \*Burchard, Thomas H. New York.  
           Campbell, Clarence G. New York.  
           Carr, William. New York.  
 Original. Carter, H. Skelton. New York.  
 Original. Chauveau, Jean F. New York.  
 Original. Chrystie, T. M. Ludlow. New York.  
           Coley, William B. New York.  
           Collins, Stacy B. Seaford, Sussex Co., Del.  
           Comfort, John E. New York.  
 Founder. Conover, William S. New York.  
           Conway, John R. New York.  
 Original. Curry, Walker. New York.  
           Dallas, Alexander. New York.  
           Dalton, W. R. I. New York.  
           Daniels, F. H. New York.  
           Davis, J. Griffith. New York.  
           Davis, Robert C. New York.  
           De Garmo, W. B. New York.  
           De Landeta, J. B. New York.  
           Delphey, Eden V. New York.  
           Dench, Edward B. New York.  
 Original. Denison, C. Ellery. New York.  
 Original. } Denison, Ellery. New York.

\*Deceased.

- Founder. Dennis, Frederic S. New York.  
           Drake, W. F. New York.  
 Original. Du Bois, Matthew B. New York.  
           Dudley, A. Palmer. New York.  
           Dunham, Edward K. New York.  
 Original. Eastman, Robert W. New York.  
           Einhorn, Max. New York.  
 Original. Eliot, Ellsworth. New York.  
           Enders, Thomas Burnham. New York.  
           Erdmann, John F. New York.  
           \*Farrington, Edward S. New York.  
           Farrington, Joseph O. New York.  
           Ferguson, Frank. New York.  
 Founder. Flint, Austin. New York.  
           Flint, Austin, Jr. New York.  
 Founder. Flint, William H. New York.  
           Foster, George V. New York.  
           Frankenberg, Jacob H. New York.  
           Fridenberg, Edward. New York.  
 Original. \*Furman, Guido. New York.  
           Gleitsmann, J. W. New York.  
 Founder. Gouley, John W. S. New York.  
           Grauer, Frank. New York.  
           Gray, Joseph F. New York.  
           Gulick, A. Reading. New York.  
           Gulick, Charlton R. New York.  
           Hammond, Frederick Porter. New York.  
 Original. Harrison, George Tucker. New York.  
           Haubold, H. A. New York.  
           Hepburn, Neil J. New York.  
           Hillis, Thomas J. New York.  
 Founder. Hinton, John H. New York.  
 Founder. Hodgman, Abbott. New York.  
           Holmes, Martha C. New York.  
           Hubbard, Dwight L. New York.  
           Jackson, Charles W. New York.  
 Founder. Janeway, Edward G. New York.  
           Janvrin, J. E. New York.  
           Jenkins, William T. New York.  
           Judson, A. B. New York.  
           Kelly, Thomas. New York.

\*Deceased.

- Kemp, William M. New York.  
King, Ferdinand. New York.  
Kneer, F. G. New York.  
Knipe, George. New York.  
Founder. Leale, Charles A. New York.  
Lewis, Robert. New York.  
Little, Albert H. New York.  
Lockwood, Charles E. New York.  
Ludlow, Ogden C. New York.  
Lukens, Anna. New York.  
Founder. Lusk, William T. New York.  
Lynch, Patrick J. New York.  
MacGregor, James R. New York.  
Mackenzie, J. C. New York.  
McAlpine, D. Hunter. New York.  
McBurney, Charles. New York.  
McGillicuddy, T. J. New York.  
McGowan, John P. New York.  
McIlroy, Samuel H. New York.  
McLeod, Johnston. New York.  
Founder. McLeod, S. B. Wylie. New York.  
Original. McLochlin, James A. New York.  
Original. McNamara, Laurence J. New York.  
McNicholl, Thomas A. New York.  
Maher, J. J. E. New York.  
Founder. Manley, Thomas H. New York.  
Marshall, Francis F. New York.  
Meier, Gottlieb C. H. New York.  
Original. Miller, William T. New York.  
Milliken, S. E. New York.  
Original. Miranda, Ramon L. New York.  
Moran, James. New York.  
Mott, Valentine. New York.  
Original. Murphy, John. New York.  
Original. Murray, Sandford J. New York.  
Original. Newman, Robert. New York.  
Founder. Nicoll, Henry D. New York.  
Original. Obendorfer, Isidor P. New York.  
O'Brien, Frederick William. New York.  
O'Brien, M. Christopher. New York.  
Ochs, Benjamin F. New York.  
Oppenheimer, H. S. New York.



- Oppenheimer, S. New York.  
 Painter, Henry McM. New York.  
 Palmer, Edmund J. New York.  
 Parker, Ransom J. New York.  
 Original. Parsons, John. New York.  
 Perry, John Gardner. New York.  
 Phelps, Charles. New York.  
 Original. Pooler, Hiram A. New York.  
 Potter, E. Styles. New York.  
 Pritchard, R. L. New York.  
 Pryor, William R. New York.  
 Founder. Purple, Samuel S. New York.  
 Read, Ira B. New York.  
 Original. Ricketts, Benjamin M. Cincinnati, O.  
 Roth, Julius A. New York.  
 Ruggles, Augustus D. New York.  
 Original. \*Sabine, Gustavus A. New York.  
 Sanders, E. New York.  
 Founder. Sayre, Lewis A. New York.  
 Sayre, Reginald H. New York.  
 Seaman, Louis L. New York.  
 Shaw, Henry B. New York.  
 Shea, Dennis L. New York.  
 Shrady, Arthur M. New York.  
 Shrady, John. New York.  
 Shrady, John Eliot. New York.  
 Silver, Henry M. New York.  
 Simmons, Charles E. New York.  
 Smith, Alexander H. New York.  
 Original. Smith, J. Lewis. New York.  
 Original. Smith, Samuel W. New York.  
 Original. Smith, Stephen. New York.  
 Spicer, Walter E. New York.  
 Stewart, F. E. New York.  
 Stewart, George D. New York.  
 Strong, Cyrus J. New York.  
 Syms, Parker. New York.  
 Founder. Thomas, T. Gaillard. New York.  
 Thompson, Von Beverhout. New York.  
 Tiemann, Paul E. New York.  
 Truax, J. G. New York.

\* Deceased.

- Founder. Tucker, Carlos P. New York.  
           Vincent, Ludger C. New York.  
           Von Dönhoff, Edward. New York.
- Original. Wallach, Joseph N. New York.  
           Walsh, Simon J. New York.
- Founder. Ward, Charles S. New York.  
           Warner, Frederic M. New York.  
           Warner, John W. New York.  
           Weeks, John E. New York.  
           Weston, Albert T. New York.  
           White, Charles B. New York.  
           White, J. Blake. New York.
- Founder. White, Whitman V. New York.
- Founder. Wiener, Joseph. New York.  
           Wiggin, Frederick Holme. New York.  
           Williams, Henry Smith. New York.  
           Woodend, William E. New York.
- Original. Wyeth, John A. New York.  
           Yankauer, Sidney. New York.

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#### ORANGE COUNTY.

- Conner, Milton C. Middletown.  
 Davis, J. O. Howells.  
 Potts, E. Port Jervis.  
 Swartwout, H. B. Port Jervis.  
 Townsend, Charles E. Newburgh.  
 Vanderveer, J. C. Monroe.  
 Vanderveer, J. R. Monroe.  
 Woodhull, Edward D. Monroe.

8

#### PUTNAM COUNTY.

- Founder. Murdock, George W. Cold Spring.  
 Founder. Young, William. Cold Spring.

2

#### QUEENS COUNTY.

- Original. Burns, William J. Sea Cliff.  
 Original. Rave, Edward G. Hicksville.

2

## RICHMOND COUNTY.

Johnston, Henry C. New Brighton.  
Martindale, F. E. Port Richmond.  
Walser, William C. West New Brighton.

3

## SUFFOLK COUNTY.

Original. Chambers, Martin L. Port Jefferson.  
Hamill, Edward H. Newark, N. J.  
Hulse, William A. Bay Shore.  
Original. Lindsay, Walter. Huntington.

4

## SULLIVAN COUNTY.

Original. \*Bennett, Thomas W. Jeffersonville.  
Crocker, Edwin. Narrowsburgh.  
DeKay, William H. Parksville.  
McWilliams, F. A. Monticello.  
Original. Munson, J. A. Woodburne.  
Piper, Charles W. Wurtsborough.  
Stearns, Benjamin W. Long Eddy.

7

## ULSTER COUNTY.

Original. Chambers, Jacob. Kingston.  
Original. HoornBeek, Philip Du Bois. Wawarsing.  
Founder. Hühne, August. Rondout.  
Original. Hühne, Frederick. Rondout.  
Reed, Albert. Highland.  
Original. Van Hovenberg, Henry. Kingston.  
Ward, John J. Ellenville.

7

## WESTCHESTER COUNTY.

Acker, Thomas J. Croton-on-Hudson.  
Original. Banks, George B. Hartsdale.  
Original. Brush, Edward F. Mount Vernon.  
Original. Coutant, Richard B. Tarrytown.

\*Deceased.

- Original. \*Furman, J. Henry. Tarrytown.  
                     Granger, William D. Mount Vernon.  
 Original. Huntington, Henry K. New Rochelle.  
 Original. Lyons, G. A. New Rochelle.  
 Original. Schmid, H. Ernst. White Plains.  
                     Small, John W. Yonkers.  
 Original. Southworth, Richmond Joseph. Washington, D. C.  
 Original. Wells, William L. New Rochelle.

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SUMMARY OF FELLOWSHIP BY DISTRICTS.

First District . . . . .	79
Second District . . . . .	125
Third District . . . . .	120
Fourth District . . . . .	158
Fifth District . . . . .	301
Non-resident . . . . .	9
Total Fellowship . . . . .	792

\*Deceased.



## ALPHABETICAL LIST OF FELLOWS.

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- Aberdein, Robert, Warren and Fayette Sts., Syracuse, Onondaga Co. Original.
- Abrams, H. C., Newtonville, Albany Co.
- Acker, Thomas J., Croton-on Hudson, Westchester Co.
- Adams, Calvin Thayer, 21 E. 28th St., New York, New York Co.
- Agramonte, Aristides, 144 W. 79th St., New York, New York Co.
- Agramonte, E. V., 152 W. 82d St., New York, New York Co.
- Alexander, Samuel, 5 W. 58th St., New York, New York Co.
- Alleman, L. A. W., 64 Montague St., Brooklyn, Kings Co.
- Allen, Amos, Grafton, Rensselaer Co. Original.
- Allen, Charles S., Greenbush, Rensselaer Co. Founder.
- Allen, Henry J., Corinth, Saratoga Co.
- Allen, S. Busby, 1364 Lexington Ave., New York, New York Co.
- Allen, S. P., Whitney's Point, Broome Co.
- Allen, Thomas H., 52 W. 45th St., New York, New York Co.
- Allen, William L., Greenbush, Rensselaer Co.
- Ames, Edward, 123 E. Lovell St., Kalamazoo, Mich. Founder.
- Anderson, R. Harcourt, 243 W. 21st St., New York, New York Co.
- Andrews, Charles H., Holland, Erie Co.
- Andrews, John L., 307 E. 86th St., New York, New York Co.
- Andrews, Lewis B., Byron, Genesee Co.
- Arango, Augustin, 132 Madison Ave., New York, New York Co.
- Arçularius, Lewis, 121 E. 25th St., New York, New York Co. Original.
- Armstrong, James A., Clinton, Oneida Co.
- Arnold, Edmund S. F., Carroll Avenue, Newport, R. I. Original.
- Arnold, Glover C., 115 E. 30th St., New York, New York Co.
- Arnold, J. Newton, Clyde, Wayne Co. Founder.
- Atwood, H. L., Collins Centre, Erie Co. Original.
- Atwood, John W., Marion, Wayne Co.
- Ayer, W. L., Owego, Tioga Co. Original.
- Ayres, Douglas, Fort Plain, Montgomery Co. Original.

Backus, 'Ogden, 67 S. Fitzhugh St., Rochester, Monroe Co. Original.

Bacon, Charles G., Fulton, Oswego Co. (Retired list.)

Bagg, Moses M., Utica, Oneida Co. Original. (Retired list.)

Bailey, Theodore P., 95 Eagle St., Albany, Albany Co. Founder.

Bailey, William C., Knoxville, Tenn. Original.

Baker, Benjamin N., Rhinebeck, Dutchess Co.

Baker, Frank R., 540 Bedford Ave., Brooklyn, E. D., Kings Co.

Baker, George W., 540 Bedford Ave., Brooklyn, E. D., Kings Co. Founder.

Baldwin, F. A., 129 W. 77th St., New York, New York Co.

Banks, George B., Hartsdale, Westchester Co. Original. (Retired list.)

Barnes, Edwin, Pleasant Plains, Dutchess Co. Original.

Barney, Charles S., Milford, Otsego Co. Original.

Barnum, D. Albert, Cassville, Oneida Co.

Bartlett, Fred. W., 523 Delaware Ave., Buffalo, Erie Co. Original.

Barton, Lyman, Willsborough, Essex Co. Founder. (Retired list.)

Barton, L. G., Willsborough, Essex Co.

Barton, Thomas J., Tivoli, Dutchess Co.

Bates, Nelson W., Central Square, Oswego Co.

Bates, Xyris T., Poughkeepsie, Dutchess Co. Original.

Bayley, Guy Carleton, Poughkeepsie, Dutchess Co. Original.

Baynes, Joseph E., 2419 5th Ave., Troy, Rensselaer Co.

Beardsley, William E., 101 Taylor St., Brooklyn, Kings Co.

Beers, John E., Danby, Tompkins Co. Founder.

Bellows, George A., Waterloo, Seneca Co.

Bemus, Morris N., Jamestown, Chautauqua Co.

Bemus, William Marvin, Jamestown, Chautauqua Co.

Benham, John C., Hudson, Columbia Co. Original.

Bennett, Arthur G., 213 Franklin St., Buffalo, Erie Co.

\* Bennett, Thomas W., Jeffersonville, Sullivan Co. Original.

Bentley, F. R., Cheshire, Ontario Co. Original. (Retired list.)

Bergtold, W. H., 56 Allen St., Buffalo, Erie Co.

Birmingham, Edward J., 8 E. 47th St., New York, New York Co.

Bierwirth, Julius C., 137 Montague St., Brooklyn, Kings Co.

Biggam, William H., Jr., 1095 Dean St., Brooklyn, Kings Co. Original.

Biggs, Chauncey P., 14 E. Seneca St., Ithaca, Tompkins Co.

Biggs, H. M., 5 W. 58th St., New York, New York Co. Original.

\* Deceased.

- Birdsall, Gilbert, North Brookfield, Madison Co. Original.
- Bissell, James H., 2187 5th Ave., Troy, Rensselaer Co.
- Blaine, Myron D., Willard, Seneca Co.
- Blair, Louis P., McDonough, Chenango Co. Original.
- Blake, Clarence R., Northville, Fulton Co. Original.
- Blanchard, R. N., Jamestown, Chautauqua Co.
- Blumer, G. Alder, State Hospital, Utica, Oneida Co. Original.
- Boies, Loren F., 286 Howard Ave., Buffalo, Erie Co. Original.
- Bond, G. F. M., State Hospital, Utica, Oneida Co.
- Bonesteel, H. F., Mill St., Troy, Rensselaer Co.
- Bonesteel, William N., Mill St., Troy, Rensselaer Co. Founder.  
(Retired list.)
- Bontecou, Reed B., 82 4th St., Troy, Rensselaer Co. Original.
- Booth, Wilbur H., 172 Genesee St., Utica, Oneida Co. Original.
- Boyce, Elias B., Averill Park, Rensselaer Co.
- Bozeman, Nathan, 9 W. 31st St., New York, New York Co.  
Founder.
- Bozeman, Nathan G., 9 W. 31 St., New York, New York Co.
- Bradford, George D., Homer, Cortland Co.
- Bradley, O. Howard, Hudson, Columbia Co.
- Rrandt, J. S., Ontario Centre, Wayne Co.
- Briggs, Albert H., 267 Hudson St., Buffalo, Erie Co. Original.
- Briggs, William H., Hemlock Lake, Livingston Co. Original.
- Brodrick, William P., 164 W. 121st St., New York, New York Co.
- Brooks, Leroy J., Norwich, Chenango Co. Original.
- Brooks, Mark N., Springville, Erie Co.
- Brown, Chas. W., 902 14th St., N. W., Washington, D. C. Original.
- Brown, George L., D. S. Morgan Building, Buffalo, Erie Co.
- Brown, J. P., Nunda, Livingston Co.
- Brown, Ulysses H., 312 Warren St., Syracuse, Onondaga Co.
- Brundage, A. H., 609 Madison St., Brooklyn, Kings Co. Original.  
(Retired list.)
- Brush, Edward F., Mount Vernon, Westchester Co. Original.
- Brush, Edward N., Shepperd Asylum, Towsen, Md. Original.
- Bryant, J. D., 54 W. 36th St., New York, New York Co. Original.
- Bryant, Percy, State Hospital, Buffalo, Erie Co.
- \*Buchanan, Alexander, 358 W. 30th St., New York, New York Co.  
Original.
- Buckley, James, 127 E. Main St., Rochester, Monroe Co. Original.
- Bull, Charles Stedman, 47 W. 36th St., New York, New York Co.  
Original.

\* Deceased.

- Bull, William T., 35 W. 35th St., New York, New York Co.  
Burbeck, Chas. H., 91 First St., Troy, Rensselaer Co. Founder.  
\*Burchard, T. H., 7 E. 48th St., New York, New York Co.  
Original.  
Burghardt, Francis Augustus, 632 Elm St., Buffalo, Erie Co.  
Burhyte, O. W., Brookfield, Madison Co.  
Burke, John J. A., 65 East Ave., Rochester, Monroe Co. Original.  
Burns, William J., Sea Cliff, Queens Co. Original.  
Burton, Henry B., 75 4th St., Troy, Rensselaer Co.  
Cady, George M., Nichols, Tioga Co.  
Cahill, John T., Hoosick Falls, Rensselaer Co.  
Caldwell, Nathan A., Hageman's Mills, Montgomery Co.  
Campbell, A. J., 332 Warren St., Syracuse, Onondaga Co.  
Campbell, Clarence G., 68 W. 35th St., New York, New York Co.  
Carpenter, Henry W., Oneida, Madison Co. Original.  
Carr, William, 35 W. 46th St., New York, New York Co.  
Carter, H. S., 130 E. 24th St., New York, New York Co. Original.  
Casey, J. E., Mohawk, Herkimer Co.  
Cavana, Martin, Oneida, Madison Co.  
Chambers, Jacob, Kingston, Ulster Co. Original.  
Chambers, Martin L., Port Jefferson, Suffolk Co. Original.  
Chapman, James, Medina, Orleans Co. Founder.  
Chauveau, Jean F., 31 W. 60th St., New York, New York Co.  
Original.  
Chittenden, Daniel J., Addison, Steuben Co.  
Chittenden, Joseph H., Binghamton, Broome Co. Founder.  
Chrystie, T. M. Ludlow, 216 W. 46th St., New York, New York Co. Original.  
Church, B. A., Oneonta, Otsego Co.  
Church, Thomas C., Valley Falls, Rensselaer Co.  
Churchill, Alonzo, 189 Genesee St., Utica, Oneida Co. (Retired list.)  
Clark, Dewitt C., Marathon, Cortland Co. Original.  
Clark, George W., Waterloo, Seneca Co.  
Clark, Wallace, 136 Park Ave., Utica, Oneida Co.  
Clendenan, C. W., N. Tonawanda, Erie Co.  
Clum, Franklin D., Cheviot, Columbia Co.  
Coddington, George H., Amenia, Dutchess Co. Founder.  
Coffin, Lawrence, 473 Bedford Ave., Brooklyn, Kings Co.  
Cohen, Bernard, 497 Niagara St., Buffalo, Erie Co.  
Coley, William B., 52 W. 35th St., New York, New York Co.

\* Deceased.



- Collins, Stacy B., Seaford, Sussex Co., Del.  
Colvin, Darwin, Clyde, Wayne Co. Founder.  
Comfort, John E., 1315 Franklin Ave., New York, New York Co.  
Comstock, George F., Saratoga Springs, Saratoga Co. Founder.  
Conderman, George, Hornellsville, Steuben Co.  
Congdon, Charles E., 1034 Jefferson St., Buffalo, Erie Co.  
Conkling, George, Durham, Greene Co. Original.  
Conner, Milton C., Middletown, Orange Co.  
Conover, William S., 237 W. 132d St., New York, New York Co.  
Founder.  
Conway, John Francis, cor. Buffalo and Union Sts., Brooklyn,  
Kings Co. Original.  
Conway, John R., 130 Lexington Ave., New York, New York Co.  
Cook, Guy Reuben, Louisville, St. Lawrence Co.  
Cooke, Almon H., 410 Ashland Ave., Buffalo, Erie Co.  
Cooley, F. L., 210 First St., Oswego, Oswego Co.  
Cooley, R. N., Hannibal Centre, Oswego Co.  
Cooper, William C., 81 3d St., Troy, Rensselaer Co. Original.  
Copley, Herman D., Bainbridge, Chenango Co.  
Cott, George F., 433 W. Huron St., Buffalo, Erie Co.  
Coutant, Richard B., Tarrytown, Westchester Co. Original.  
Cramer, William, 136 Mansion St., Poughkeepsie, Dutchess Co.  
Founder.  
Crane, Frank W., Corfu, Genesee Co. Original.  
Crawe, J. Mortimer, Watertown, Jefferson Co. Founder.  
Creamer, Joseph, Jr., 168 N. 6th St., Brooklyn, E. D., Kings Co.  
Criado, Louis F., 147 Fort Green Place, Brooklyn, Kings Co.  
Crocker, Edwin, Narrowsburg, Sullivan Co.  
Crombie, Walter C., Mechanicsville, Saratoga Co. Original.  
Cronyn, John, 55 W. Swan St., Buffalo, Erie Co. Founder.  
Crosby, Alexander H., Lowville, Lewis Co.  
Crounse, Andrew C., Melrose, Rensselaer Co.  
Curry, Walker, 21 E. 61st St., New York, New York Co. Original.  
Curtis, Daniel, Jeddo, Orleans Co.  
Curtis, D. F., 102 South Ave., Rochester, Monroe Co.  
Curtis, P. C., Round Lake, Saratoga Co.  
Dagenais, Alphonse, 473 W. Virginia St., Buffalo, Erie Co. Original.  
Dallas, Alexander, 22 E. 22d St., New York, New York Co.  
Dallas, Alexander J., 48 Warren St., Syracuse, Onondaga Co.  
Founder.  
Dalton, W. R. I., 477 W. 145th St., New York, New York Co.  
Dandridge, N. P., 148 Broadway, Cincinnati, Ohio.

- Daniels, Clayton M., 868 Main St., Buffalo, Erie Co. Original.
- Daniels, F. H., 140 W. 126th St., New York, New York Co.
- D'Avignon, Francis J., Au Sable Forks, Essex Co. Original.
- Davis, J. Griffith, 200 W. 14th St., New York, New York Co.
- Davis, J. O., Howells, Orange Co.
- Davis, Robert C., 150 E. 128th St., New York, New York Co.
- Dayton, C. L., 246 Dearborn St., Buffalo, Erie Co. (Retired list).
- Dean, Harmon J., Brocton, Chautauqua Co. Founder.
- DeGarmo, W. B., 56 W. 36th St., New York, New York Co.
- DeKay, William H., Parksville, Sullivan Co.
- De Landeta, J. B., 228 W. 44th St., New York, New York Co.
- DeLaney, John Pope, Geneva, Ontario Co.
- Delphey, Eden V., 353 W. 57th St., New York, New York Co.
- Dench, Edward B., 17 W. 46th St., New York, New York Co.
- Denison, Charles Ellery, 113 W. 12th St., New York, New York Co.  
Original.
- Denison, Ellery, 113 W. 12th St., New York, New York Co.  
Original.
- Dennis, Frederick S., 542 Madison Ave., New York, New York Co.  
Founder.
- De Witt, Byron, Oswego, Oswego Co. Original.
- Dickinson, M. D., Troy, Rensselaer Co.
- Dickson, Thomas Gordon, Troy, Rensselaer Co.
- Didama, Emory A., Cortland, Cortland Co.
- Didama, Henry D., 112 S. Salina St., Syracuse, Onondaga Co.  
Founder.
- Dodge, Amos P., Oneida Castle, Oneida Co.
- Dodge, Frank B., Mount Morris, Livingston Co.
- Dodge, Lyndehurst C., Rouse's Point, Clinton Co. Founder.
- Donohue, Florince O., 410 Warren St., Syracuse, Onondaga Co.  
Original.
- Dorland, Elias T., 388 Elmwood Ave., Buffalo, Erie Co. Original.
- Douglas, Edgar H., Little Falls, Herkimer Co.
- Douglas, George, Oxford, Chenango Co.
- Douglass, A. J., Ilion, Herkimer Co.
- Douglass, Charles E., Lowville, Lewis Co.
- Douglass, James W., Boonville, Oneida Co.
- Drake, D. Delos, Johnstown, Fulton Co.
- Drake, E. G., 312 W. Church St., Elmira, Chemung Co.
- Drake, Frank C., Oneida, Madison Co.
- Drake, James B., Hancock, Delaware Co.
- Drake, W. F., 101 W. 84th St., New York, New York Co.

- Du Bois, Matthew B., Hotel Renaissance, New York, New York Co.  
Original.
- Dudley, A. Palmer, 678 Madison Ave., New York, New York Co.
- Dudley, Dwight, Maine, Broome Co.
- Dunham, Edward K., 338 E. 26th St., New York, New York Co.
- Dunlop, John J., Waterford, Saratoga Co. Original.
- Dunn, Jeremiah, Bath, Steuben Co. Original.
- Dunning, J. D., Webster, Monroe Co. Original.
- Earle, George W., Tully, Onondaga Co.
- Eastman, L. O., Union, Broome Co.
- Eastman, Robert W., 170 W. 76th St., New York, New York Co.  
Original.
- Eddy, George P., Lewiston, Niagara Co.
- Eddy, John L., Olean, Cattaraugus Co.
- Edwards, Amos S., 1506 N. Salina St., Syracuse, Onondaga Co.  
Original.
- Edwards, George A., Catherine and Lodi Sts., Syracuse, Onondaga  
Co. Original.
- Edwards, John, Gloversville, Fulton Co.
- Einhorn, Max, 20 E. 63d St., New York, New York Co.
- Eldridge, Stuart, Yokohama, Japan. (Non-resident).
- Eliot, Ellsworth, 48 W. 36th St., New York, New York Co. Original.
- Ellinwood, A. G., Attica, Wyoming Co. Original.
- Ellis, J. B., Whitesborough, Oneida Co.
- Ellison, Metler D., Canisteo, Steuben Co. Original.
- Ellsworth, Victor A., 41 Waltham St., Boston, Mass.
- Ely, Henry Oliver, Binghamton, Broome Co. Original.
- Enders, Thomas Burnham, 163 W. 121st St., New York, New York Co.
- English, G. P., Booneville, Oneida Co.
- Erdmann, John F., 144 W. 44th St., New York, New York Co.
- Essig, George, 488 Bedford Ave., Brooklyn, Kings Co.
- Farnham, LeRoy D., Binghamton, Broome Co.
- \*Farrington, Edward S., 213 W. 81st St., New York, New York Co.
- Farrington, John M., Binghamton, Broome Co.
- Farrington, Joseph O., 1991 Madison Ave., New York, New York Co.
- Feeley, James F., 296 Lorimer St., Brooklyn, E. D., Kings Co.
- Fell, George E., 72 Niagara St., Buffalo, Erie Co.
- Fenno, Henry Marshall, 77 W. Main St., Rochester, Monroe Co.
- Ferguson, E. D., 1 Union Place, Troy, Rensselaer Co. Founder.
- Ferguson, Frank, 20 W. 38th St., New York, New York Co.
- Finder, William, Jr., 2 Union Place, Troy, Rensselaer Co. Founder.

\*Deceased.

- Fisher, John C., Warsaw, Wyoming Co.  
Fitzgerald, David J., Glens Falls, Warren Co.  
Fitzgerald, John F., State Custodial Asylum, Rome, Oneida Co.  
Flanigan, John R., Syracuse, Onondaga Co.  
Fletcher, Charles L., Wing's Station, Dutchess Co. Original.  
Flickinger, John, Trumansburg, Tompkins Co.  
Flint, Austin, 60 E. 34th St., New York, New York Co. Founder.  
Flint, Austin, Jr., 18 E. 45th St., New York, New York Co.  
Flint, William H., Ridgefield, Conn. Founder. (Retired list.)  
Ford, M. L., Oneonta, Otsego Co.  
Forker, Frederick L., Binghamton, Broome Co.  
Foster, George V., 109 E. 18th St., New York, New York Co.  
Fowler, Joseph, 31 Church St., Buffalo, Erie Co.  
Frankenberg, Jacob H., 142 E. 74th St., New York, New York Co.  
Fraser, Jefferson C., Ava, Oneida Co.  
Frederick, Carlton C., 64 Richmond Ave., Buffalo, Erie Co.  
French, S. H., Amsterdam, Montgomery Co.  
Fridenberg, Edward, 242 Lenox Ave., New York, New York Co.  
Fritts, Crawford Ellsworth, Hudson, Columbia Co.  
Fuller, Earl D., 66 Varick St., Utica, Oneida Co.  
\*Furman, G., 234 W. 34th St., New York, New York Co. Original.  
\*Furman, J. Henry, Tarrytown, Westchester Co. Original.  
Garlock, William D., Little Falls, Herkimer Co.  
Getty, A. H., Athens, Greene Co.  
Gibson, William M., 187 Genesee St., Utica, Oneida Co.  
Gilbert, Horatio, Hornellsville, Steuben Co.  
Gleitsmann, J. W., 46 E. 25th St., New York, New York Co.  
Glidden, Charles H., Little Falls, Herkimer Co. Original.  
Goler, George W., 54 S. Fitzhugh St., Rochester, Monroe Co.  
Gould, Cassius W., 1428 Main St., Buffalo, Erie Co.  
Gouley, J. W. S., 11 E. 43d St., New York, New York Co.  
Founder.  
Gow, Frank F., Schuylerville, Saratoga Co.  
Granger, William D., Bronxville (Vernon House), Westchester Co.  
Grant, Charles S., Saratoga Springs, Saratoga Co. Founder.  
Grauer, Frank, 326 W. 46th St., New York, New York Co.  
Gravatt, Edwin J., 361 Second St., Troy, Rensselaer Co.  
\*Graves, Ezra, Amsterdam, Montgomery Co. Original.  
Gray, Joseph F., 354 W. 29th St., New York, New York Co.  
Green, H. H., Paine's Hollow, Herkimer Co.  
Green, Stephen S., 426 Niagara St., Buffalo, Erie Co.

\* Deceased.



- Greene, Clark W., Binghamton, Broome Co.  
Greene, Cordelia A., Castile, Wyoming Co.  
Greene, DeWitt C., 1125 Main St., Buffalo, Erie Co. Original.  
Greene, Joseph C., 124 Swan St., Buffalo, Erie Co. Founder.  
Greene, Walter D., 444 Elk St., Buffalo, Erie Co. Original.  
Greenman, C. E., 179 1st St., Troy, Rensselaer Co.  
Gulick, A. Reading, 30 W. 36th St., New York, New York Co.  
Gulick, Charlton R., 30 W. 36th St., New York, New York Co.  
Guy, J. D., Chenango Forks, Broome Co.  
Hagadorn, William, Gilboa, Schoharie Co. Original.  
Hagey, J. M., Mount Morris, Livingston Co.  
Halbert, M. L., Cincinnatus, Cortland Co.  
Hall, William H., Saratoga Springs, Saratoga Co. Original.  
Hamill, Edward H., 302 6th Ave., Newark, N. J.  
Hammer, Charles, Schenectady, Schenectady Co.  
Hammond, Frederick P., 143 E. 117th St., New York, New York Co.  
Hand, S. M., Norwich, Chenango Co.  
Hannan, James C., Hoosick Falls, Rensselaer Co. Founder.  
Hannan, Thomas H., Hoosick Falls, Rensselaer Co.  
Harrington, D. W., 1430 Main St., Buffalo, Erie Co. Original.  
Harrison, George Tucker, 221 W. 23d St., New York, New York Co. Original.  
Hartwig, Marcell, 34 E. Huron St., Buffalo, Erie Co.  
Harvie, J. B., 6 Clinton Place, Troy, Rensselaer Co. Founder.  
Hatch, C. A., 10 E. Onondaga St., Syracuse, Onondaga Co. Original.  
Haubold, H. A., 140 E. 72d St., New York, New York Co.  
Hayd, Herman E., 78 Niagara St., Buffalo, Erie Co.  
Hayes, Philetus A., Afton, Chenango Co.  
Haynes, John U., 103 Mohawk St., Cohoes, Albany Co.  
Head, Adelbert D., 202 E. Genesee St., Syracuse, Onondaga Co. Founder.  
Heath, William H., 415 Pearl St., Buffalo, Erie Co.  
Heimstreet, Thomas B., 14 Division St., Troy, Rensselaer Co. Original.  
Hendrick, Henry C., McGrawville, Cortland Co. Founder.  
Henning, Thomas I., Glens Falls, Warren Co.  
Hepburn, Neil J., 369 W. 23d St., New York, New York Co.  
Hicks, Edward E., 923 Jefferson Ave., Brooklyn, Kings Co.  
Hicks, W. Scott, Bristol, Ontario Co. Original.  
Higgins, F. W., Cortland, Cortland Co.

- Hillis, Thomas J., 51 Charlton St., New York, New York Co.  
Hills, Lyman H., Binghamton, Broome Co. Original.  
Himmelsbach, George A., 30 12th St., Buffalo, Erie Co.  
Hinton, John H., 41 W. 32d St., New York, New York Co.  
Founder.  
Hodgman, Abbott, 141 E. 38th St., New York, New York Co.  
Founder.  
Hodgman, William H., 108 Caroline St., Saratoga Springs, Saratoga Co. Founder.  
Holcomb, O. A., Plattsburgh, Clinton Co.  
Holden, Arthur L., 116 South St., Utica, Oneida Co.  
Holmes, Martha C., 75 W. 126th St., New York, New York Co.  
HoornBeek, Philip Du Bois, Warwarsing, Ulster Co. Original.  
(Retired list.)  
Horton, David B., Red Creek, Wayne Co.  
Hough, F. P., Binghamton, Broome Co.  
Houston, David W., 44 2d St., Troy, Rensselaer Co. Original.  
Hovey, B. L., 34 N. Fitzhugh St., Rochester, Monroe Co. Founder.  
Howard, Charles F., 1458 Main St., Buffalo, Erie Co.  
Howland, George T., 1916 N St., Washington, D. C.  
Hoyer, F. F., Tonawanda, Erie Co. Founder.  
Hubbard, Chauncey G., Hornellsville, Steuben Co.  
Hubbard, Dwight L., 117 W. 93d St., New York, New York Co.  
Hubbell, Alvin A., 212 Franklin St., Buffalo, Erie Co.  
Hudson, George, Stillwater, Saratoga Co.  
Huestis, W. B., Flatbush Ave., cor. Hubbard Place, Brooklyn, Kings Co.  
Huggins, William Q., Sanborn, Niagara Co.  
Hughes, Henry R., Clinton, Oneida Co.  
Hughes, Peter, 275 Berry St., Brooklyn, Kings Co.  
Hulette, G. S., Arcade, Wyoming Co.  
Hühne, August, Rondout, Ulster Co. Founder. (Retired list.)  
Hühne, Frederic, Rondout, Ulster Co. Original.  
Hull, Thomas H., 55 Lee Ave., Brooklyn, Kings Co.  
Hulse, William A., Bay Shore, Suffolk Co.  
Humphrey, J. F., Saratoga Springs, Saratoga Co.  
Hunt, H. L., Orchard Park, Erie Co.  
Hunt, James G., 5 Gardner Block, Utica, Oneida Co. Original.  
Hunt, W. J., Glens Falls, Warren Co.  
Hunter, Nathaniel P., Jasper, Steuben Co.  
Huntington, Henry K., New Rochelle, Westchester Co. Original.  
Huntington, John W., Mexico, Oswego Co.

- Huntley, James F., Oneida, Madison Co.  
Hutton, M. B., Valley Falls, Rensselaer Co.  
Ilgen, Ernst, 369 Herkimer St., Brooklyn, Kings Co. Original.  
(Retired list.)  
Ingraham, Henry D., 405 Franklin St., Buffalo, Erie Co.  
Ingraham, Samuel, Palmyra, Wayne Co. Original. (Retired list.)  
Inlay, Erwin G., Saratoga Springs, Saratoga Co.  
Jackson, Albert P., Oakfield, Genesee Co. Founder.  
Jackson, Charles W., 130 W. 81st St., New York, New York Co.  
Jackson, William H., Springville, Erie Co.  
Jacobson, Nathan, 430 S. Salina St., Syracuse, Onondaga Co.  
Original.  
Jamison, John S., Hornellsville, Steuben Co. Original.  
Janeway, Edward G., 36 W. 40th St., New York, New York Co.  
Founder.  
Janvrin, J. E., 191 Madison Ave., New York, New York Co.  
Jenkins, John A., 271 Jefferson Ave., Brooklyn, E. D., Kings Co.  
Original.  
Jenkins, William T., 109 E. 26th St., New York, New York Co.  
Jewett, F. A., 282 Hancock St., Brooklyn, Kings Co.  
Jewett, Homer O., Cortland, Cortland Co. Founder.  
Johnson, George P., Mexico, Oswego Co.  
Johnson, Henry W., Hudson, Columbia Co.  
Johnson, Ianthus G., Greenfield Centre, Saratoga Co. Original.  
Johnson, Leonard M., Greene, Chenango Co. Original.  
Johnson, Parley H., Adams, Jefferson Co. Original.  
Johnson, Richard G., Amsterdam, Montgomery Co. Original.  
Johnson, Thomas M., 418 Main St., Buffalo, Erie Co. Original.  
Johnston, Henry C., New Brighton, Richmond Co.  
Jones, Allen A., 436 Franklin St., Buffalo, Erie Co.  
Jones, George H., Fowlerville, Livingston Co.  
Jones, S. Case, 21 East Ave., Rochester, Monroe Co.  
Joslin, Albert A., Martinsburgh, Lewis Co.  
Judson, A. B., 25 Madison Ave., New York, New York Co.  
Julian, John M., Pleasant Valley, Dutchess Co.  
Keefer, Charles W., Mechanicsville, Saratoga Co.  
Keith, Halbert Lyon, Upton, Mass.  
Kelley, John Devin, Lowville, Lewis Co.  
Kelly, Thomas, 357 W. 57th St., New York, New York Co.  
Kemp, William M., 267 W. 23d St., New York, New York Co.  
Kenyon, Benjamin, Cincinnatus, Cortland Co.  
Kenyon, Frank, Scipio, Cayuga Co.

- Kenyon, "M.," King's Ferry, Cayuga Co.    Original.  
 Killen, Jack, Binghamton, Broome Co.  
 King, Ferdinand, 149 W. 66th St., New York, New York Co.  
 King, James K., Watkins, Schuyler Co.  
 Kingsley, Henry F., Schoharie, Schoharie Co.    Original.  
 \*Kittridge, Charles M., Fishkill-on-Hudson, Dutchess Co.    Founder.  
 Klock, Charles M., St. Johnsville, Montgomery Co.  
 Knapp, W. H., Binghamton, Broome Co.  
 Kneeland, B. T., Dalton, Livingston Co.  
 Kneeland, Jonathan S., Onondaga, Onondaga Co.    Founder.  
     (Retired list.)  
 Kneer, F. G., 236 W. 51st St., New York, New York Co.  
 Knipe, George, 353 W. 24th St., New York, New York Co.  
 Kniskern, A. C., Mechanicsville, Saratoga Co.  
 Kuhn, William, Rome, Oneida Co.  
 LaBell, Martin J., Lewis, Essex Co.    Original.  
 Laird, William R., 98 Wall St., Auburn, Cayuga Co.    Original.  
 Lake, Albert D., Gowanda, Cattaraugus Co.  
 Lambert, John, Salem, Washington Co.  
 Landon, Newell E., Newark, Wayne Co.    Original.  
 Lapp, Henry, Clarence, Erie Co.  
 Leach, H. M., Charlton City, Massachusetts.    Original.  
 Leale, Charles A., 604 Madison Ave., New York, New York Co.  
     Founder.  
 Leaning, John K., Cooperstown, Otsego Co.    Founder.  
 Leffingwell, E. D., Watkins, Schuyler Co.  
 Leighton, N. W., 143 Taylor St., Brooklyn, E. D., Kings Co.  
     Original.  
 Le Roy, Irving D., Pleasant Valley, Dutchess Co.    Founder.  
 Lester, Elias, Seneca Falls, Seneca Co.    Founder.  
 Lewis, Le Roy, Auburn, Cayuga Co.  
 Lewis, Robert, 14 E. 45th St., New York, New York Co.  
 Lindsay, Walter, Huntington, Suffolk Co.    Original.  
 Little, Albert H., 349 W. 23d St., New York, New York Co.  
 Little, Frank, 114 Montague St., Brooklyn, Kings Co.  
 Lloyd, T. Mortimer, 125 Pierrepont St., Brooklyn, Kings Co.  
     Original.  
 Lockwood, Charles E., 34 W. 38th St., New York, New York Co.  
 Lockwood, J. W., Philmont, Columbia Co.    Original.  
 Long, Alfred J., Whitehall, Washington Co.  
 Long, Ben G., 1408 Main St., Buffalo, Erie Co.

\*Deceased.



- Ludlow, Ogden C., 2309 7th Ave., New York, New York Co.  
Lukens, Anna, 1068 Lexington Ave., New York, New York Co.  
Lusk, William T., 47 E. 34th St., New York, New York Co.  
    Founder.  
Lusk, Zera J., Warsaw, Wyoming Co.  
Lyman, H. C., Sherburne, Chenango Co. Original.  
Lynch, Patrick J., 216 E. 13th St., New York, New York Co.  
Lyon, E. M., Plattsburgh, Clinton Co. Founder.  
Lyon, George E., Planter's Hotel, St. Louis, Mo. Original.  
Lyons, Edward L., 298 4th St., Troy, Rensselaer Co.  
Lyons, G. A., New Rochelle, Westchester Co. Original.  
Macfarlane, William A., Springville, Erie Co.  
MacGregor, James R., 1118 Madison Ave., New York, New York Co.  
Mackenzie, J. C., 432 W. 22d St., New York, New York Co.  
Maclean, Donald, 72 Lafayette Ave., Detroit, Mich. (Non-resident.)  
Magee, Charles M., 800 South West St., Syracuse, Onondaga Co.  
Magee, Daniel, 608 Federal St., Troy, Rensselaer Co. Original.  
Maher, J. J. E., 215 W. 23d St., New York, New York Co.  
Maine, Alvah P., Webster, Monroe Co.  
Manley, Thomas H., 115 W. 49th St., New York, New York Co.  
    Founder.  
Mann, Carl C., Warsaw, Wyoming Co.  
Marsh, E. Frank, Fulton, Oswego Co.  
Marsh, James P., 1739 5th Ave., Troy, Rensselaer Co.  
Marshall, Francis F., 56 W. 56th St., New York, New York Co.  
Martin, John H., Otego, Otsego Co. Original.  
Martindale, F. E., Port Richmond, Richmond Co.  
Martine, Godfrey R., Glens Falls, Warren Co. Original.  
McAlpin, D. Hunter, 40 W. 40th St., New York, New York Co.  
McBurney, Charles, 28 W. 37th St., New York, New York Co.  
McCollom, William, 195 Lefferts Place, Brooklyn, Kings Co.  
    Original.  
McDaniel, Alfred C., San Antonio, Texas. (Non-resident.)  
McDonald, George E., Schenectady, Schenectady Co. Original.  
McDougall, R. A., Duaneburg, Schenectady Co.  
McDougall, William D., Spencerport, Monroe Co. (San Jose, Cal.)  
McGann, Thomas, Wells, Hamilton Co.  
McGillicuddy, T. J., 776 Madison Ave., New York, New York Co.  
McGowen, John P., 109 E. 28th St., New York, New York Co.  
McIlroy, Samuel H., 330 Alexander Ave., New York, New York Co.  
McLeod, Johnston, 247 W. 23d St., New York, New York Co.

- McLeod, S. B. Wylie, 247 W. 23d St., New York, New York Co.  
 Founder.
- McLochlin, James A., 157 W. 21st St., New York, New York Co.  
 Original.
- McNamara, Daniel, 243 W. Genesee St., Syracuse, Onondaga Co.  
 Original.
- McNamara, Laurence J., 126 Washington Place (West), New York,  
 New York Co.    Original.
- McNicholl, Thomas A., 321 E. 50th St., New York, New York Co.
- McWilliams, F. A., Monticello, Sullivan Co. .
- Meacham, Isaac D., Binghamton, Broome Co.
- Meier, Gottlieb C. H., 126 E. 58th St., New York, New York Co.
- Menzie, R. J., Caledonia, Livingston Co.    Original.
- \*Merritt, George, Cherry Valley, Otsego Co.    Original.
- Meyer, George L., Stone Arabia, Montgomery Co.
- Michael, F. M., Binghamton, Broome Co.
- Milbury, Frank S., 215 Jefferson Ave., Brooklyn, Kings Co.
- Miles, George W., Oneida, Madison Co.
- Miller, William T., 310 W. 27th St., New York, New York Co.  
 Original.
- Milliken, S. E., 640 Madison Ave., New York, New York Co.
- Minard, E. J. Chapin, 243 Quincy St., Brooklyn, Kings Co.  
 Original.
- Miranda, Ramon L., 116 W. 64th St., New York, New York Co.  
 Original.
- Montgomery, J. J., Luzerne, Warren Co.
- Montmarquet, J. D., Cohoes, Albany Co.
- Moore, Allan N., Lockport, Niagara Co.
- Moore, Edward M., 74 S. Fitzhugh St., Rochester, Monroe Co.  
 Founder.
- Moore, Edward M., Jr., S. 74 Fitzhugh St., Rochester, Monroe Co.  
 Original.
- Moore, Macdonald, Fredonia, Chautauqua Co.
- Moore, Richard Mott, 74 S. Fitzhugh St., Rochester, Monroe Co.  
 Original.
- Moore, William A., Binghamton, Broome Co.
- Moran, James, 352 W. 51st St., New York, New York Co.
- Morehouse, E. W., 199 2d St., Troy, Rensselaer Co.
- Moriarta, Douglas C., Saratoga Springs, Saratoga Co.
- Morrow, William B., Walton, Delaware Co.
- Mott, Valentine, 62 Madison Ave., New York, New York Co.

\*Deceased.

- Moyer, Frank H., Moscow, Livingston Co. Original.  
Mudge, Selden J., Olean, Cattaraugus Co.  
Muir, William Scott, Truro, Nova Scotia. (Non-resident.)  
Mulford, Henry J., 466 Franklin St., Buffalo, Erie Co.  
Munger, Charles, Knoxborough, Oneida Co.  
Munson, J. A. Woodbourne, Sullivan Co. Original.  
Munson, W. W., Otisco, Onondaga Co. Original.  
\* Murdoch, James Bissett, 4232 5th Ave., Pittsburgh, Pa. (Non-resident.)  
Murdock, George W., Cold Spring, Putnam Co. Founder.  
Murphy, John, 249 E. 35th St., New York, New York Co. Original.  
Murray, Byron J., Saratoga Springs, Saratoga Co. Original.  
Murray, S. J., 133 W. 87th St., New York, New York Co. Original.  
Murray, William D., Tonawanda, Erie Co. Original.  
Nelson, William H., Taberg, Oneida Co.  
Newman, George W., 234 Leonard St., Brooklyn, Kings Co.  
Newman, Robert, 64 W. 36th St., New York, New York Co. Original.  
Nichols, Calvin E., 25 1st St., Troy, Rensselaer Co. Founder.  
Nichols, William H., West Sand Lake, Rensselaer Co. Founder.  
Nicholson, A. R., Madison, Madison Co. Original.  
Nicoll, Henry D., 51 E. 57th St., New York, New York Co. Founder.  
Nold, John B., Utica, Oneida Co. (Retired list.)  
North, Nelson L., 627 Bedford Ave., Brooklyn, Kings Co. Original.  
Noyes, James B., New Berlin, Chenango Co.  
Nutton, Wilbur F., Newark, Wayne Co.  
Obendorfer, Isidor P., 1037 Lexington Ave., New York, New York Co. Original.  
O'Brien, Frederick Wm., 244 Lenox Ave., New York, New York Co.  
O'Brien, M. Christopher, 161 W. 122d St., New York, New York Co.  
Ochs, Benjamin F., 120 W. 120th St., New York, New York Co.  
O'Hare, Thomas A., 157 State St., Rochester, Monroe Co. Original.  
Oliver, William, Penn Yan, Yates Co.  
Oppenheimer, H. S., 49 E. 23d St., New York, New York Co.  
Oppenheimer, S., 55 E. 65th St. (The Palacio), New York, New York Co.  
Orton, John G., Binghamton, Broome Co. Founder.  
Ostrander, George A., 61 Greene Ave., Brooklyn, Kings Co.  
Packer, Thurston G., Smyrna, Chenango Co.  
Page, Emmett D., 297 De Kalb Ave., Brooklyn, Kings Co.

\* Deceased.

- Paine, Arthur R., 99 Lafayette Ave., Brooklyn, Kings Co.  
Original.
- Painter, Henry McM., 600 Madison Ave., New York, New York Co.
- Palmer, Edmund J., 1342 Lexington Ave., New York, New York Co.
- Palmer, F. A., Mechanicsville, Saratoga Co.
- Palmer, George M., Warsaw, Wyoming Co. Original.
- Palmer, Henry C., cor. Genesee and Hopper Sts., Utica, Oneida Co.
- Palmer, Walter B., 30 South St., Utica, Oneida Co.
- Parent, J. S., Birshton, Saratoga Co.
- Parker, Ransom J., 130 Lexington Ave., New York, New York Co.
- Parkhill, C. S., Hornellsville, Steuben Co.
- Parr, John Buel, Montgomery Co.
- Parsons, Israel, Marcellus, Onondaga Co. Founder.
- Parsons, John, Kingsbridge, New York, New York Co. Original.
- Parsons, W. W. D., Fultonville, Montgomery Co.
- Pease, Joseph, Hamlin, Monroe Co. Original.
- Peele, Francis, 220 Schermerhorn St., Brooklyn, Kings Co.
- Perry, John Gardner, 48 E. 34th St., New York, New York Co.
- Peters, Samuel, 86 Mohawk St., Cohoes, Albany Co. Founder.
- Pettit, John A., 519 Swan St., Buffalo, Erie Co. Original.
- Phelan, M. Francis, 25 Thirteenth St., Troy, Rensselaer Co.
- Phelps, Charles, 34 W. 37th St., New York, New York Co.
- Phelps, George G., 239 Blandina St., Utica, Oneida Co.
- Phelps, William C., 146 Allen St., Buffalo, Erie Co.
- Pierce, Edward A., Binghamton, Broome Co.
- Pierson, George E., Kirkwood, Broome Co. (Retired list.)
- Piper, Charles W., Wurtsborough, Sullivan Co.
- Place, John F., Jr., Binghamton, Broome Co.
- Pohlman, Julius, 382 Franklin St., Buffalo, Erie Co.
- Pooler, Hiram A., 34 Gramercy Park, New York, New York Co.  
Original. (Retired list.)
- Porter, H. N., 1910 Harewood Ave., Washington, D. C. Founder.  
(Retired list.)
- Potter, E. Styles, 64 W. 55th St., New York, New York Co.
- Potter, Vaughn C., Starkville, Herkimer Co. Original.
- Potts, E., Port Jervis, Orange Co.
- Pratt, Frank R., Manchester, Ontario Co.
- Pray, S. R., 191 South 9th St., Brooklyn, Kings Co. Original.
- Preston, John R., Schuylerville, Saratoga Co. Original.
- Price, Henry R., 485 Franklin Ave., Brooklyn, Kings Co.
- Prince, Alpheus, Byron, Genesee Co.
- Pritchard, R. L., 72 W. 49th St., New York, New York Co.



- Pryor, William R., 15 Park Ave., New York, New York Co.  
Pultz, Monroe T., Standfordville, Dutchess Co. Founder.  
Purple, S. S., 36 W. 22d St., New York, New York Co. Founder.  
Putnam, Frederick W., Binghamton, Broome Co. Founder.  
Race, W. F., 115 W. 25th St., Kearney, Neb. Original.  
Rae, Robert, Portageville, Wyoming Co. Original.  
Rave, Edward G., Hicksville, Queens Co. Original.  
Raynor, F. C., 163 Clinton St., Brooklyn, Kings Co.  
Read, Ira B., 2074 Fifth Ave., New York, New York Co.  
Reagles, James, Schenectady, Schenectady Co. Original.  
Reed, Albert, Highland, Ulster Co.  
Reed, Henry B., 545 Franklin Avenue, Brooklyn, Kings Co.  
Reese, Frank D., Cortland, Cortland Co.  
Reid, Christopher C., Rome, Oneida Co.  
Reitz, Charles, Webster, Monroe Co.  
Reynolds, Tabor B., Saratoga Springs, Saratoga Co. Founder.  
Richards, Charles B., Binghamton, Broome Co. Founder.  
Richardson, John E., 127 S. Oxford St., Brooklyn, Kings Co.  
Richmond, Nelson G., Fredonia, Chautauqua Co.  
Ricketts, Benjamin M., 137 Broadway, Cincinnati, O. Original.  
Riley, Andrew W., 207 S. 16th St., Omaha, Neb. Original.  
Risch, Henry F. W., 521 3d St., Brooklyn, Kings Co.  
Robb, William H., Amsterdam, Montgomery Co. Founder.  
Robinson, Ezra A., Geneva, De Kalb Co., Ill. Original.  
Rochester, DeLancey, 469 Franklin St., Buffalo, Erie Co.  
Rochester, Thomas M., 326 De Kalb Ave., Brooklyn, Kings Co.  
Rodgers, Harris C., Benicia, Cal.  
Rogers, S. Frank, 3161 6th Ave., Troy, Rensselaer Co. Original.  
Rolph, R. T., Fredonia, Chautauqua Co.  
Roper, P. B., Alpine, Schuyler Co.  
Ross, Frank W., 251 Baldwin St., Elmira, Chemung Co. Original.  
Roth, Julius A., 308 E. 79th St., New York, New York Co.  
Rousseau, Zotique, 99 2d St., Troy, Rensselaer Co. Founder.  
Rudgers, Denton W., Hornellsville, Steuben Co.  
Ruggles, Augustus D., 294 St. Nicholas Ave., New York, New York Co.  
Rulison, L. B., West Troy, Albany Co.  
Rushmore, J. D., 129 Montague St., Brooklyn, Kings Co. Founder.  
Russell, Charles P., 198 Genesee St., Utica, Oneida Co.  
Russell, Wm. G., 27 McDonough St., Brooklyn, Kings Co. Original.  
Sabal, E. T., 45 W. Monroe St., Jacksonville, Fla. (Non-resident.)  
Sabin, Wm. B., 1425 Broadway, West Troy, Albany Co. Founder.

\*Sabine, G. A., 43 E. 68th St., New York, New York Co. Original.  
 Sale, E. Paul, Masonic Temple, Memphis, Tenn.  
 Sanders, E., 126 E. 82d St., New York, New York Co.  
 Sawyer, Conant, Auburn, Cayuga Co. Founder.  
 Saxer, L. A., 514 Prospect Ave., Syracuse, Onondaga Co. Original.  
 Sayre, Lewis A., 285 5th Ave., New York, New York Co. Founder.  
 Sayre, Reginald H., 285 5th Ave., New York, New York Co.  
 Schmid, H. Ernst, White Plains, Westchester Co. Original.  
 Schopp, Justin H., 127 E. Main St., Rochester, Monroe Co.  
 Scully, Thomas P., Rome, Oneida Co.  
 Seaman, Louis L., 18 W. 31st St., New York, New York Co.  
 Seaman, Frank G., Seneca Falls, Seneca Co.  
 Sears, F. W., 326 Montgomery St., Syracuse, Onondaga Co.  
 Segur, Avery, 281 Henry St., Brooklyn, Kings Co. Founder.

(Retired list.)

Selden, Robert, Catskill, Greene Co. Original.  
 Seymour, Ralph A., Whitney's Point, Broome Co.  
 Seymour, W. Wotkyns, 105 3d St., Troy, Rensselaer Co. Founder.  
 Sharer, John P., Little Falls, Herkimer Co. Original.  
 Shaw, Henry B., 21 E. 127th St., New York, New York Co.  
 Shea, Dennis L., 116 Waverley Place, New York, New York Co.  
 Shepard, A. W., 126 Willoughby St., Brooklyn, Kings Co. Original.  
 Sherer, John D., Waterford, Saratoga Co. Original.  
 Sherman, F. J., Ballston, Saratoga Co.  
 Shradly, Arthur M., 60 W. 38th St., New York, New York Co.  
 Shradly, John, 149 W. 126th St., New York, New York Co.  
 Shradly, John Eliot, 149 W. 126th St., New York, New York Co.  
 Silver, Henry M., 105 W. 72d St., New York, New York Co.  
 Simmons, Charles E., 762 Madison Ave., New York, New York Co.  
 Simmons, E. W., Canandaigua, Ontario Co. Founder. (Retired

list.)

Simons, Frank E., Canajoharie, Montgomery Co.  
 Sizer, Nelson Buell, 336 Green Ave., Brooklyn, Kings Co. Original.  
 Skinner, Smith A., Hoosick Falls, Rensselaer Co. Original.

(Retired list.)

Slater, Frank Ellsworth, Binghamton, Broome Co.  
 Small, John W., 222 Neperham Ave., Yonkers, Westchester Co.  
 Smelzer, Baxter T., Havana, Schuyler Co.  
 Smith, Alexander H., 40 W. 47th St., New York, New York Co.  
 Smith, Edward L., Binghamton, Broome Co.  
 Smith, F. A., Corinth, Saratoga Co.

\*Deceased.

- Smith, Frederick A., 3 Clinton Place, Troy, Rensselaer Co.  
Smith, George C., Delhi, Delaware Co.  
Smith, H. Lyle, Hudson, Columbia Co. Original.  
Smith, J. Lewis, 64 W. 56th St., New York, New York Co. Original.  
Smith, Samuel L., Smithville Flats, Chenango Co.  
Smith, Samuel W., Hotel San Remo, 75th St., New York, New York Co. Original.  
Smith, Stephen, 640 Madison Ave., New York, New York Co. Original.  
Smyth, Arthur V. H., Amsterdam, Montgomery Co.  
Snook, George M., Parma, Monroe Co.  
Southworth, Richmond Joseph, 1220 36th St., N. W., Washington, D. C. Original. (Retired list.)  
Spicer, Walter E., 62 Charlton St., New York, New York Co.  
Sprague, John A., Williamson, Wayne Co. Original.  
Sprague, L. S., Williamson, Wayne Co. (Retired list.)  
Squibb, Edward H., 148 Columbia Heights, Brooklyn, Kings Co. Founder. (P. O. Box 760.)  
Squibb, Edward R., 152 Columbia Heights, Brooklyn, Kings Co. Founder.  
Squire, Charles L., 409 E. Church St., Elmira, Chemung Co.  
Stearns, Benjamin W., Long Eddy, Sullivan Co.  
Steinke, C. O. H., 220 17th St., Brooklyn, Kings Co. Original.  
Stewart, F. E., West Broadway and Franklin Sts., New York, New York Co.  
Stewart, George D., 130 E. 36th St., New York, New York Co.  
St. John, David, Hackensack, N. J. (Non-resident.)  
Stockschlaeder, P., 186 South Ave., Rochester, Monroe Co.  
Stockton, Charles G., 436 Franklin St., Buffalo, Erie Co.  
Stone, Frank L., LeRoy, Genesee Co.  
Strong, Cyrus J., 49 W. 35th St., New York, New York Co.  
Strong, Orville C., Colden, Erie Co.  
Strong, Thomas D., Westfield, Chautauqua Co. Founder.  
Stubbs, Roland H., Waterford, Saratoga Co. Original.  
Sullivan, John D., 74 McDonough St., Brooklyn, Kings Co.  
Sutton, H. C., Rome, Oneida Co.  
Sutton, Richard E., Rome, Oneida Co.  
Swan, William E., Saratoga Springs, Saratoga Co.  
Swanick, A. A., Saratoga Springs, Saratoga Co.  
Swartwout, H. B., Port Jervis, Orange Co.  
Swartwout, Leander, Prospect, Oneida Co.  
Sweeney, James M., 78 Varick St., Utica, Oneida Co.

Sweet, Joshua J., Unadilla, Otsego Co.

Sweetman, J. T., Jr., Ballston, Saratoga Co.

Syms, Parker, 60 W. 47th St., New York, New York Co.

Taber, R. C., Tonawanda, Erie Co.

Taylor, John H., Holley, Orleans Co. Original.

Tefft, Charles B., Room 20, Arcade, Utica, Oneida Co.

Thayer, William Henry, Berkshire, Mass. (Retired list.)

Thomas, T. Gaillard, 600 Madison Ave., New York, New York Co.

Founder.

Thompson, R. A., Norwich, Chenango Co.

Thompson, Amos W., Saratoga Springs, Saratoga Co.

Thompson, Von Beverhout, 111 W. 43d St., New York, New York Co.

Thornton, William H., 572 Niagara St., Buffalo, Erie Co.

Thwing, Clarence, Ft. Wrangel, Alaska.

Tiemann, Paul E., 180 W. 94th St., New York, New York Co.

Todd, John B., Parish, Oswego Co.

Tompkins, Fred J., 128 2d Ave., Lansingburgh, Rensselaer Co.

Tompkins, H. C., Knowlesville, Orleans Co. Founder. (Retired list.)

Tompkins, Orren A., East Randolph, Cattaraugus Co. Original.

Townsend, Charles E., 231 Liberty St., Newburgh, Orange Co.

Townsend, Morris W., Bergen, Genesee Co. Founder.

Travis, Edward M., Eagle Grove, Iowa.

Tremaine, Wm. S., 217 Franklin St., Buffalo, Erie Co. Founder.

Tripp, John D., Auburn, Cayuga Co. Original.

Truax, J. G., 17 E. 127th St., New York, New York Co.

Trull, H. P., Williamsville, Erie Co.

Tucker, Carlos P., 43 W. 26th St., New York, New York Co. Founder.

Turner, Melvin H., Ticonderoga, Essex Co. Original.

Twohey, John J., 301 Masten St., Buffalo, Erie Co.

Vanderhoof, Frederick D., Phelps, Ontario Co. Original.

Vanderveer, J. C., Monroe, Orange Co.

Vanderveer, J. R., Monroe, Orange Co.

Van de Warker, Ely, 404 Fayette Park, Syracuse, Onondaga Co. Founder.

Van Etten, Cornelius S., Rhinebeck, Dutchess Co.

Van Hoevenberg, Henry, Kingston, Ulster Co. Original.

Van Vranken, Adam T., 1603 3d Ave., West Troy, Albany Co. Original.

Van Wagner, L. A. Sherburne, Chenango Co.



- Van Zandt, Henry C., Schenectady, Schenectady Co. Original.  
Varney, Miles E., Saratoga Springs, Saratoga Co.  
Vedder, George W., Philmont, Columbia Co.  
Veeder, Andrew T., 93 Fifth Ave., Pittsburgh, Pa.  
Von Dönhoff, Edward, 82 Christopher St., New York, New York Co.  
Vincent, Ludger C., 350 W. 58th St., New York, New York Co.  
Wakely, Benjamin C., Angelica, Alleghany Co. Original.  
Wales, Theron A., Elmira, Chemung Co. Original.  
Walker, James E., Hornellsville, Steuben Co.  
Wall, Charles A., 306 Hudson St., Buffalo, Erie Co.  
Wallace, Edwin E., Jasper, Steuben Co.  
Wallach, Joseph G., 7 W. 82d St., New York, New York Co.  
Original.  
Walser, William C., West New Brighton, Richmond Co.  
Walsh, Simon J., 25 E. 128th St., New York, New York Co.  
Ward, Charles S., 30 W. 33d St., New York, New York Co. Founder.  
Ward, John J., Ellenville, Ulster Co.  
Ward, R. H., 53 4th St., Troy, Rensselaer Co.  
Warner, Frederick M., 66 W. 56th St., New York, New York Co.  
Warner, John W., 107 E. 72d St., New York, New York Co.  
Waterworth, William, 3 Hancock St., Brooklyn, Kings Co.  
Webster, W. B., Schuylerville, Saratoga Co.  
Weeks, John E., 154 Madison Ave., New York, New York Co.  
Welles, S. R., Waterloo, Seneca Co. (Retired list.)  
Wells, William L., New Rochelle, Westchester Co. Original.  
West, Joseph E., 171 Genesee St., Utica, Oneida Co.  
Weston, Albert T., 226 Central Park West, between 82d and 83d  
Sts., New York, New York Co.  
Wheeler, Isaac G., Marilla, Erie Co.  
Wheeler, John T., Chatham, Columbia Co.  
Whipple, Electa B., 491 Porter Ave., Buffalo, Erie Co.  
White, Charles B., 107 W. 72d St., New York, New York Co.  
White, J. Blake, 1013 Madison Ave., New York, New York Co.  
White, Whitman V., 114 E. 85th St., New York, New York Co.  
Founder.  
White, William A., Binghamton, Broome Co.  
Whitford, James, Onondaga Valley, Onondaga Co. Original.  
Wieber, Adolph, 181 S. 5th St., Brooklyn, Kings Co.  
Wiener, Joseph, 1046 5th Ave., New York, New York Co. Founder.  
Wiggin, Frederick Holme, 55 W. 36th St., New York, New York Co.  
Williams, George O., Green, Chenango Co.  
Williams, Henry Smith, 165 W. 82d St., New York, New York Co.

Williams, William H., 207 17th St., Brooklyn, Kings Co. Original.  
 Willoughby, M., 1335 Main St., Buffalo, Erie Co.  
 Wilson, Thomas, Claverack, Columbia Co. Founder.  
 Whitbeck, Charles E., Cohoes, Albany Co.  
 Woodend, William E., 10 W. 126th St., New York, New York Co.  
 Woodhull, Edward D., Monroe, Orange Co.  
 Woodruff, E. Gould, Auburn, Cayuga Co.  
 Woodruff, R. Allen, Philmont, Columbia Co.  
 Woodworth, T. Floyd, Kinderhook, Columbia Co.  
 Wright, Theodore Goodell, Plainville, Hartford Co., Conn. (Non-resident.)  
 Wyckoff, C. C., 482 Delaware Ave., Buffalo, Erie Co. Founder.  
 Wyckoff, R. M., 532 Clinton Ave., Brooklyn, Kings Co. Founder.  
 Wyeth, J. A., 27 E. 38th St., New York, New York Co. Original.  
 Yankauer, Sidney, 163 E. 79th St., New York, New York Co.  
 Young, Augustus A., Newark, Wayne Co. Original.  
 Young, John D., Starkville, Herkimer Co. Original.  
 Young, Wm., Cold Spring, Putnam Co. Founder. (Retired & list.)  
 Zeh, Edgar, Waterford, Saratoga Co.  
 Zeh, Merlin J., 1521 Broadway, West Troy, Albany Co.

Of 164 Founders, 95 remain on the list; of 286 Original Fellows, 197 remain on the list. Total Fellowship, 792.

#### RETIREF FELLOWS.

Charles G. Bacon, Fulton, Oswego County (1891).  
 M. M. Bagg, Utica, Oneida County (1891).  
 George B. Banks, Hartsdale, Westchester County (1892).  
 Lyman Barton, Willsborough, Essex County (1890).  
 F. R. Bentley, Cheshire, Ontario County (1891).  
 William N. Bonesteel, Troy, Rensselaer County (1890).  
 Amos H. Brundage, Brooklyn, Kings County (1897).  
 Alonzo Churchill, Utica, Oneida County (1890).  
 C. L. Dayton, Buffalo, Erie County (1891).  
 W. H. Flint, Ridgefield, Conn. (1895).  
 Philip DuB. HoornBeek, Wawarsing, Ulster County (1891).  
 August Hühne, Rondout, Ulster County (1897).  
 Ernst Ilgen, 360 Herkimer St., Brooklyn, Kings County (1895).  
 Samuel Ingraham, Palmyra, Wayne County (1890).  
 Jonathan S. Kneeland, Onondaga County (1890).  
 John B. Nold, Utica, Oneida County (1894).  
 George E. Pierson, Kirkwood, Broome County (1895).

- H. A. Pooler, 34 Gramercy Park, New York, New York County (1892).  
H. N. Porter, Washington, D. C. (1891).  
Avery Segur, 281 Henry St., Brooklyn, Kings County (1893).  
E. W. Simmons, Canandaigua, Ontario County (1892).  
S. A. Skinner, Hoosick Falls, Rensselaer County (1895).  
R. J. Southworth, Washington, D. C. (1894).  
L. S. Sprague, Williamson, Wayne County (1891).  
W. H. Thayer, Berkshire, Mass. (1895).  
H. C. Tompkins, Knowlesville, Orleans County (1893).  
S. R. Welles, Waterloo, Seneca County (1894).  
William Young, Cold Spring, Putnam County (1891).

## NON-RESIDENT FELLOWS.

- N. P. Dandridge, 148 Broadway, Cincinnati, Ohio.  
Stuart Eldridge, Yokohama, Japan.  
Alfred C. McDaniel, San Antonio, Texas.  
Donald Maclean, 72 Lafayette Ave., Detroit, Mich.  
William Scott Muir, Truro, Nova Scotia.  
\*James Bissett Murdoch, 4232 Fifth Ave., Pittsburgh, Pa.  
E. T. Sabal, 45 W. Monroe St., Jacksonville, Fla.  
David St. John, Hackensack, N. J.  
Theodore Goodell Wright, Plainville, Hartford Co., Conn.

## CORRESPONDING FELLOW.

- Henry O. Marcy, 180 Commonwealth Ave., Boston, Mass. (1890).

\*Deceased.

# DECEASED FELLOWS.

NAME.	Age	COUNTY.	PLACE OF BIRTH.	DATE OF DEATH.	MEDICAL COLLEGE.	YEAR OF GRADUATION.
Abell, Ira H. (F) <sup>1</sup>	71	Jefferson	Fairfield, Vt.	April 29, 1894.	Vermont Med. Coll.	1844
Adams, John G. (F)	77	New York	New York City	June 19, 1884.	Coll. Phys. and Surg., N. Y.	1880
Allaben, O. M. (O) <sup>2</sup>	83	Delaware	Delaware Co., N. Y.	Nov. 27, 1891.	Woodstock, Vt.	1881
Andrews, John S. (O)	61	Kings	Bristol, Conn.	Jan. 3, 1889.	Univ. City of New York	1849
Andrews, Judson B. (F)	60	Erie	North Haven, Conn.	Aug. 3, 1894.	Yale Med. School	1863
Ashton, Isaiah H.	39	Westchester	Philadelphia, Pa.	Feb. 16, 1889.	University of Pennsylvania	1870
Avery, George W. (F)	61	Cheungo	Earlville, N. Y.	Nov. 1, 1888.	Albany Medical College	1850
Ayres, Alexander (F)	74	Montgomery	Oppenheim, N. Y.	Aug. 27, 1886.	Castleton, Vt.	1842
Babcock, Myron N. (F)	73	Saratoga	West Berkshire, Vt.	May 21, 1892.	Vermont Medical College	1842
Ballou, William R.	29	New York	Bath, Me.	March 9, 1893.	Bellevue Hosp. Med. Coll.	1886
Barker, A. M. (O)	37	Erie	Kendall, Orleans Co., N. Y.	Dec. 6, 1887.	University of Buffalo	1877
Bathgate, James (O)	65	New York	New York	March 27, 1891.	Coll. Phys. and Surg., N. Y.	1846
Baynes, William T. (O)	48	Rensselaer	England	Jan. 22, 1892.	Albany Medical College	1871
Bemus, William P.	63	Chautauqua	Chautauqua Co.	Sept. 19, 1890.	Berkshire Medical College	1847
Bennett, Thos. W. (O)	62	Sullivan	Altona	Nov. 27, 1896.	University of N. Y.	1896
Blakeman, William N. (O)	85	New York	Roxbury, Conn.	Aug. 10, 1890.	Yale	1832
Buchanan, Alexander (O)	..	New York	..	..	New York Med. Coll.	1862
Buckley, Charles (O)	..	Monroe	..	..	University of Pennsylvania	1870
Bucklin, Daniel D. (O)	70	Rensselaer	Brunswick, N. Y.	April 19, 1890.	Albany Medical College	1846
Budd, J. Henry (O)	45	Ontario	United States	Feb. 25, 1890.	Buffalo Medical College	1875
Burchard, Thos. H. (O)	..	New York	..	..	Bellevue Hosp. Med. Coll.	1872
Burton, M. H. (F)	62	Rensselaer	Albany, N. Y.	April 28, 1895.	Albany Medical College	1863

<sup>1</sup> (F) Founder.

<sup>2</sup> (O) Original Fellow.



Burwell, George N. (O) . . .	72	Erie . . .	Norway, Herkimer Co. .	May 15, 1891.	University of Pennsylvania	1843
Carroll, Alfred Ludlow (F)	60	New York . .	New York City . . .	Oct. 30, 1893.	Univ. City of New York .	1855
Case, Mary W. . . . .	33	Rensselaer . .	New York State . . .	Aug. 19, 1889.	Woman's Med. Coll., Phila.	1882
Chace, William (F) . . .	58	Chautauqua .	St. Catharine's, Canada .	Dec. 27, 1891.	Coll. Phys. and Surg., N. Y.	1858
Church, Allen S. (F) . .	62	New York . .	Great Barrington, Mass..	Oct. 24, 1884.	Castleton, Vt. . . . .	1848
Clark, Alonzo . . . . .	80	New York . .	Chester, Mass. . . . .	Sept. 13, 1887.	Coll. Phys. and Surg., N. Y.	1835
Clark, Simeon T. (O) . .	55	Niagara . . .	Canton, Mass. . . . .	Dec. 24, 1891.	Berkshire Med. Coll. . .	1860
Coit, William N. (F) . .	52	Clinton . . .	Plattsburgh, N. Y. . .	Aug. 4, 1886.	University of Pennsylvania	1856
Collins, Isaac G. (F) . .	53	Westchester .	Granville, N. Y. . . .	Dec. 18, 1885.	Albany Medical College .	1858
Collins, Thomas B. (O) .	61	Monroe . . .	Mendon, N. Y. . . . .	Feb. 17, 1888.	Jefferson Med. Coll., Phila.	1851
Cooper, William S. (F) . .	70	Rensselaer . .	Scotland . . . . .	May 26, 1890.	Albany Medical College .	1860
Cornell, F. O. (O) . . .	29	Montgomery .	Glenville, N. Y. . . .	Dec. 3, 1884.	Albany Medical College .	1880
Cotes, J. R. . . . .	54	Genesee . . .	Batavia, N. Y. . . . .	March 20, 1884.	Med. Dep. Univ. Buffalo .	1852
Creamer, Joseph . . . .	63	Kings . . . .	Halifax, Nova Scotia .	Jan. 6, 1893.	Coll. Phys. and Surg., N. Y.	1850
Cruttenden, Albert G. . .	75	Ontario . . .	Covington, N. Y. . . .	June 7, 1890.	Willoughby Univ., Ohio .	1840
Damainville, Lucien . . .	52	New York . .	Erie, Pa. . . . .	Dec. 15, 1891.	Long Island Coll. Hosp. .	1860
Davidson, John (F) . . .	91	Queens . . .	New York City . . . .	Dec. 26, 1884.	Lie. N. Y. St. Med. Soc. .	1829
De La Mater, S. G. (F) . .	73	Schenectady .	Bethlehem, Alb. Co., N. Y.	June 23, 1888.	Albany Medical College .	1842
de Zouche, Isaac (F) . .	..	Fulton . . . .	. . . . .	. . . . .	Albany Med. Coll. . . . .	1869
Du Bois, Abram (F) . . .	81	New York . .	Red Hook, N. Y. . . .	Aug. 29, 1891.	Coll. Phys. and Surg., N. Y.	1835
Eager, William B. (O) . .	65	Orange . . . .	Orange Co. . . . .	Jan. 18, 1890.	Coll. Phys. and Surg., N. Y.	1843
Earll, George W. (F) . . .	53	Onondaga . .	Mottville, N. Y. . . .	July 8, 1890.	Buffalo Medical College .	1858
Edgerly, Edward F. (F) . .	50	Essex . . . .	Morrah, Essex Co. . . .	June 23, 1889.	Albany Medical College .	1864
Elder, Jennie S. . . . .	32	Onondaga . .	Syracuse, N. Y. . . . .	Feb. 2, 1889.	Med. Dep. Syracuse Univ.	1878
Farrington, E. S. . . . .	..	New York . .	. . . . .	. . . . .	Coll. Phys. and Surg., N. Y.	1892
Ferguson, James (O) . . .	74	Warren . . . .	Kortwright, N. Y. . . .	Oct. 27, 1892.	Castleton, Vt. . . . .	1841
Field, M. D. . . . .	41	New York . .	Nashville, Tenn. . . .	March 8, 1895.	Bellevue Hosp. Med. Coll. .	1879
Fitch, William (F) . . .	70	Tompkins . .	Franklin, N. Y. . . . .	Sept. 14, 1893.	Albany Medical College .	1846

DECEASED FELLOWS.—*Continued.*

NAME.	AGE.	COUNTY.	PLACE OF BIRTH.	DATE OF DEATH.	MEDICAL COLLEGE.	YEAR OF GRADUATION.
Flint, Austin (F)	73	New York	Petersham, Mass.	March 13, 1886.	Harvard Medical College	1833
Flood, Patrick Henry (O)	72	Chemung	Pennsylvania	March 12, 1886.	Geneva Medical College	1845
Fox, Eli	57	Herkimer	Columbia, N. Y.	Oct. 13, 1890.	Med. Dep. Univ. City N. Y.	1855
Fuller, Winfield S. (O)	48	Monroe	Walworth, N. Y.	Jan. 13, 1888.	Coll. Phys. and Surg., N. Y.	1861
Fuller, Robert	72	Schenectady	Schenectady, N. Y.	May 9, 1894.	Albany Med. Coll.	1875
Furman, Guido (O)	..	New York	..	..	University City of N. Y.	1856
Furman, J. Henry (O)	..	..	..	..	Coll. Phys. and Surg., N. Y.	1864
Garrish, John P. (O)	76	New York	New Brunswick, N. J.	April 1, 1891.	Jefferson Med. Coll., Phila.	1836
Gay, Charles C. F. (F)	66	Erie	Pittsfield, Mass.	March 27, 1886.	Berkshire Medical College	1846
Gillis, William (F)	72	Franklin	Cornwall, Can.	Feb. 17, 1894.	Castleton, Vt.	1849
Goldthwaite, Henry	52	New York	Mobile, Ala.	Jan. 3, 1895.	Bellevue Hosp. Med. Coll.	1876
Govan, William (F.)	65	Rockland	Barnet, Vt.	March 22, 1894.	New York Med. Coll.	1854
Graves, Ezra (O)	56	Montgomery	Russia, N. Y.	June 30, 1895.	University of Buffalo	1865
Gray, John Perdue (F)	61	Oneida	Half Moon, Pa.	Nov. 29, 1886.	University of Pennsylvania	1849
Gray, John W. (F)	53	Livingston	America	April 17, 1886.	University of New York	1856
Green, Caleb (F)	73	Cortland	La Fayette, N. Y.	May 10, 1893.	Geneva Medical College	1844
Griswold, Gaspar (O)	29	New York	New York City	March 4, 1886.	Bellevue Hosp. Med. Coll.	1878
Guernsey, Desault (F)	55	Dutchess	Wilton, N. Y.	Dec. 9, 1885.	Coll. Phys. and Surg., N. Y.	1850
Hall, H. C. (O)	41	Broome	America	June 1, 1887.	University of New York	1869
Hall, John E. (O)	38	Albany	New Marlboro', Mass.	Nov. 3, 1886.	Albany Medical College	1877
Hamilton, Frank H. (F)	73	New York	Wilmington, Vt.	Aug. 11, 1886.	University of Pennsylvania	1835
Higgins, Seabury M. (O)	67	Onondaga	Brewster, Mass.	Dec. 9, 1889.	University City of N. Y.	1848

Hinds, Frederic J. (O)	32	Washington	East Greenwich, N. Y.	April 26, 1887.	Bellevue Hosp. Med. Coll.	1876
Hogan, Michael K.	64	New York	County Clare, Ireland	Feb. 25, 1894.	Coll. Phys. and Surg., N. Y.	1858
Hollister, Edwin O. (O)	41	Ontario	Batavia, N. Y.	Oct. 8, 1887.	Bellevue Hosp. Med. Coll.	1874
Hubbard, George E.	86	New York	Natural Bridge, N. Y.	March 23, 1893.	Med. Dep. Univ. City N. Y.	1883
Hubbard, Samuel T. (F.)	36	New York	Haddam, Conn.	June 1, 1894.	Coll. Phys. and Surg., N. Y.	1835
Hull, William H.	51	Rensselaer	Petersburgh, N. Y.	Dec. 1, 1894.	Albany Med. Coll.	1866
Hunt, James H. (O)	44	Orange	Centreville, Sullivan Co.	Dec. 20, 1892.	Bellevue Hosp. Med. Coll.	1872
Husted, N. C. (F)	66	Westchester	Round Hill, Conn.	Nov. 19, 1891.	University City of N. Y.	1850
Hutchison, Joseph C. (F)	60	Kings	Old Franklin, Mo.	July 17, 1887.	University of Pennsylvania	1848
Hyde, Frederick (F)	80	Cortland	Whitney Point, N. Y.	Oct. 15, 1887.	Fairfield Medical College	1836
Johnston, Francis U. (F)	66	Richmond	New York City	Nov. 20, 1892.	Coll. Phys. and Surg., N. Y.	1852
King, James E. (O)	66	Erie	Warren, Pa.	Jan. 21, 1888.	Buffalo Medical College	1848
Kittridge, Chas. M. (F)	67	Dutchess	New York State	Dec. 7, 1890.	Coll. Phys. and Surg., N. Y.	1863
Knapp, Edwin A. (O)	67	Onondaga	New Fairfield, Conn.	April 30, 1886.	Geneva Med. Coll.	1851
Knapp, John H. (O)	67	Cortland	Verona, N. Y.	April 10, 1892.	{ Chenango Co. Med. Soc. Geneva Med. Coll.	1843
Lamb, Milton M.	68	Rensselaer	Edinburgh, Scotland	Dec. 13, 1887.	Castleton, Vt.	1856
Lamont, John Campbell	47	Wayne	Germany	Oct. 31, 1886.	Med. Dep. Univ. City N. Y.	1862
Lauer, Eugene (O)	40	New York	Niantic, Conn.	Jan. 5, 1890.	Giessen and Marburg	1868
Lester, Sullivan W. (O)	40	Rensselaer	Northfield, Conn.	July 12, 1887.	Med. Dep. Univ. City N. Y.	1881
Linsly, Jared (F)	84	New York	Torrington, Conn.	Nov. 20, 1892.	Coll. Phys. and Surg., N. Y.	1829
Lynan, E. S. (O)	80	Chenango	Sullivan County	July 9, 1891.	Regents Univ. N. Y.	1870
Mathews, David	60	New York	North Carolina	May 5, 1892.	Coll. Phys. and Surg., N. Y.	1860
Maury, Rutson	27	New York	Maryland	Jan. 13, 1887.	Bellevue Hosp. Med. Coll.	1887
McClellan, Christopher R.	73	Kings	Bainbridge, N. Y.	Dec. 26, 1893.	University of Maryland	1835
McEwen, Robert C. (F)	60	Saratoga	Troy, N. Y.	April 12, 1891.	Coll. Phys. and Surg., N. Y.	1856
McTammany, George H.	31	Rensselaer	Troy, N. Y.	July 21, 1888.	Albany Medical College	1884
McTammany, Wm. F. (O)	36	Rensselaer			Bellevue Hosp. Med. Coll.	1880

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NAME.	AGE.	COUNTY.	PLACE OF BIRTH.	DATE OF DEATH.	MEDICAL COLLEGE.	YEAR OF GRADUATION.
Merritt, George (O) . . .	..	Otsego . . .	. . . . .	. . . . .	Castleton Med. Coll. . . .	1850
Mitchell, Howard E. (F.) .	49	Rensselaer . . .	Hudson, N. Y. . . . .	Aug., 1894.	University of Maryland . .	1882
Moore, Joseph W. (F) . . .	47	Albany . . .	Troy, N. Y. . . . .	Sept. 9, 1886.	Castleton, Vt. . . . .	1859
Morrell, Isaac . . . . .	79	Chemung . . .	Cornish, Me. . . . .	Sept. 8, 1887.	Bowdoin Medical College . .	1832
Murdock, J. B. . . . .	..	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Nichols, Henry W. (F) . . .	75	Ontario . . .	Whiting, Vt. . . . .	. . . . .	. . . . .	. . . . .
O'Meagher, William . . .	67	New York . . .	Killenaule, Ireland . . .	Feb. 26, 1896.	University of New York . .	1857
Pask, William (O) . . . .	55	Erie . . . .	England . . . . .	Aug. 24, 1884.	Med. Dep. Univ. Buffalo . .	1884
Peck, M. R. (O) . . . . .	62	Warren . . .	Sand Lake, N. Y. . . . .	April 4, 1884.	Albany Medical College . .	1851
Perry, Nathaniel M. (O) . .	77	Steuben . . .	Troupsburg, N. Y. . . .	April 3, 1894.	Geneva Med. Coll. . . . .	1845
Pollard, Abiathar . . . . .	90	Essex . . . .	Bridgewater, Vt. . . . .	April 15, 1893.	Castleton, Vt. . . . .	1836
Pomeroy, Charles G. (F) . .	71	Wayne . . . .	New York . . . . .	Dec. 14, 1887.	{ Ontario Co. Med. Soc. . .	1837
					{ Jefferson Medical Coll. . .	1850
Porteous, J. G. (F) . . . .	56	Dutchess . . .	Morial, N. Y. . . . .	July 11, 1895.	Harvard . . . . .	1862
Pryer, W. Chardavoyne (F)	54	Westchester . .	New York City . . . . .	Sept. 24, 1888.	Coll. Phys. and Surg., N. Y.	1863
Purdy, Isaac (O) . . . . .	57	Sullivan . . .	Walkill, N. Y. . . . .	Dec. 6, 1885.	Castleton, Vt. . . . .	1851
Ransom, H. B. . . . .	..	New York . . .	. . . . .	. . . . .	Coll. Phys. and Surg., N. Y.	1857
Reynolds, Rufus C. (F) . . .	79	Monroe . . . .	Columbia, Herkimer Co. .	Dec. 22, 1886.	Fairfield Med. Coll., N. Y.	1830
Rice, George . . . . .	44	Saratoga . . .	Mechanicsville, N. Y. . .	Jan. 12, 1894.	Albany Med. Coll. . . . .	1872
Ring, William (F) . . . . .	63	Erie . . . . .	United States . . . . .	April 20, 1887.	University of Buffalo . . .	1848
Robinson, Joseph W. . . . .	49	Steuben . . . .	Angelica, N. Y. . . . .	Jan. 4, 1887.	Buffalo Medical College . .	1862
Rochester, Thomas F. (F) . .	63	Erie . . . . .	Rochester, N. Y. . . . .	May 24, 1887.	University of Pennsylvania	1848



Sabin, Robert Hall (F)	56	Albany	Saxton's River, Vt.	Dec. 4, 1888.	Albany Medical College	1886
Sabine, G. A. (O)	84	New York	County Dorset, Eng.	Nov. 17, 1896.	Royal Coll. Surg., London.	1882
Sayre, Lewis Hall (F)	38	New York	New York City	Jan. 2, 1890.	Bellevue Hosp. Med. Coll.	1876
Schoonmaker, E. J. (F)	65	Seneca	Ulster Co., N. Y.	Aug. 19, 1889.	Geneva Medical College	1848
Selden, O. G. (O)	53	Greene	Pike, N. Y.	Jan. 28, 1890.	Starling Med. Coll.	1867
Skiff, George V. (O)	57	New York	Albany, N. Y.	Dec. 10, 1886.	Univ. City of New York	1860
Slack, Henry (F)	65	Dutchess	Pompey, N. Y.	Mar. 3, 1885.	Albany Medical College	1852
Slocum, J. O. (F)	35	Onondaga	New York City	Mar. 19, 1891.	Castleton, Vt.	1846
Smith, David M.	60	Yates	Farmington, N. Y.	Dec. 9, 1890.	Bellevue Hosp. Med. Coll.	1877
Smith, Joseph T. (F)	74	Ontario	Taylor, N. Y.	Dec. 11, 1890.	Jefferson Med. Coll., Phila.	1854
Smith, Marcellus R. (O)	55	Cortland	Pavilion, N. Y.	Mar. 16, 1891.	Geneva Medical College	1847
Sprague, William B. (F)	66	Genesee	Russia, Herkimer Co.	Nov. 27, 1889.	University of Buffalo	1857
Squire, Truman Hoffman	27	Chemung	Buffalo, N. Y.	Feb. 12, 1888.	Coll. Phys. and Surg., N. Y.	1848
Steele, Charles G.	37	Erie	Germany	July 2, 1890.	University of Buffalo	1886
Steinführer, Gustavus A. (F)	31	Schenectady	Ithaca, N. Y.	Dec. 4, 1884.	Coll. Phys. and Surg., N. Y.	1874
Stevens, Frederick P. (O)	44	New York	Troy, Ohio	Feb. 3, 1888.	Bellevue Hosp. Med. Coll.	1877
Stevenson, William G.	63	Rockland	Louisville, N. Y.	Sept. 6, 1888.	Bellevue Hosp. Med. Coll.	1864
Sutton, George Samuel	73	Dutchess	Falland, Conn.	Aug. 3, 1895.	Coll. Phys. and Surg., N. Y.	1859
Sweet, Joseph (O)	79	Otsego	Philadelphia, Pa.	Oct. 30, 1889.	Philadelphia Med. Coll.	1848
Taylor, Isaac E. (F)	56	New York	Half Moon, N. Y.	May 17, 1895.	University of Pennsylvania	1834
Traver, Richard D. (O)	36	Rensselaer	Wheeler, N. Y.	June 15, 1891.	Bellevue Hosp. Med. Coll.	1867
Van Dusen, Melville E.	52	Steuben	Hopewell Junction, N. Y.	Jan. 28, 1896.	Med. Dep. Univ. Mich.	1879
Van Wyck, R. C. (O)	44	Dutchess	Buffalo, N. Y.	Mar. 18, 1891.	Coll. Phys. and Surg., N. Y.	1867
Vaughn, Frank O. (O)	85	Erie	Devonport, England	Jan. 20, 1890.	Med. Dep. Buffalo Univ.	1880
Webb, Edwin (O)	58	Queens	Rome, N. Y.	Oct. 2, 1889.	Coll. Phys. and Surg., N. Y.	1825
West, M. Calvin	56	Oneida	New York City	Sept. 17, 1893.	Michigan University	1860
White, Francis V.	64	New York	Richmond, Me.		Univ. City of New York	1855
White, William T. (F)		New York			New York Med. Coll.	1855

# DECEASED FELLOWS.—*Concluded.*

NAME.	AGE.	COUNTY.	PLACE OF BIRTH.	DATE OF DEATH.	MEDICAL COLLEGE.	YEAR OF GRADUATION.
Wieber, Georga (O) . . .	70	Kings . . .	Weitzler, Germany . . .	Jan. 31, 1896.	Kings Co. Med. Soc. . . .	1875
Willis, A. B. . . . .	43	Schenectady . . .	Coeymans, N. Y. . . .	May 10, 1891.	Albany Medical College . .	1870
Winship, Cornelius A. (O)	62	Rensselaer . . .	Litchfield, Conn. . . .	Feb. 14, 1888.	Albany Medical College . .	1858
Wood, Charles S. (F) . . .	65	New York . . .	Litchfield, Conn. . . .	Feb. 1, 1890.	Jefferson Med. Coll., Phila.	1851
Woodend, William D. (F) .	61	Suffolk . . .	Portsmouth, Va. . . .	Mar. 8, 1893.	University of Pennsylvania	1855
Young, John (O) . . . .	71	Dutchess . . .	Ireland . . . . .	Sept. 2, 1893.	Coll. Phys. and Surg., N. Y.	1844
Young, Oscar H. (O) . . .	43	Delaware . . .	Pennsylvania . . . .	Jan. 21, 1889.	Jefferson Med. Coll., Phila.	1876

Total Deceased Fellows, 155.

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